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ARMY AIR FORCES HISTORICAL STUDIES: NO 22

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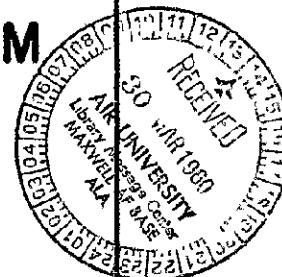
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LEGISLATION  
RELATING  
TO THE  
AAF  
MATERIEL PROGRAM

1939 - 1945



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AIR HISTORICAL OFFICE  
Headquarters, United States Air Force  
Department of the Air Force  
August 1949

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ALLY AIR FORCES HISTORICAL STUDIES: NO. 22

(Revised)

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Director  
Aerospace Studies Inst  
AFHHS Archives Branch  
Maxwell AFB, Alabama

RETURN TO:

LEGISLATION RELATING TO THE AAF MATERIAL PROGRAM

1939-1945

Air Historical Office  
Headquarters, United States Air Force  
Department of the Air Force  
August 1949

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Congressional sanction for the procurement of aircraft and other air equipment was one of the most important elements in the building of an effective air force for World War II. As war threatened in Europe late in the 1930's, the United States took steps to strengthen its air arm. This study examines the series of legislative authorizations for the execution of the AAF materiel program from 1939 to the end of the war in 1945, grouping the measures in five broad categories: (1) authorization and appropriation for new aircraft; (2) provision of funds to prepare industry for mass production and for expediting deliveries; (3) provisions concerning contracts and the limitation of profits; (4) creation and support of research facilities; and (5) foreign sale and lend-lease of air material. Some phases of materiel legislation, such as action concerning acquisition of land, construction of bases, and maintenance of facilities, have been excluded as belonging more specifically to the histories of the bases and to field service activities than to a history of materiel legislation.

An earlier version of this history, prepared by Dr. Chase C. Mooney, carried the account to the summer of 1945. Dr. Chauncey E. Sanders has supplied additional material to cover the story for the remainder of the war.

Other AAF Historical Studies treat different portions of the legislative acts discussed here. They are No. 7 (Rev.), Legislation Relating to the AAF Training Program, 1939-1945; No. 16 (Rev.), Legislation Relating to the AAF Personnel Program, 1939-1945; and No. 39, Legislation Relating to the Air Corps Personnel and Training Programs, 1907-1939.

Readers familiar with the subject matter are invited to furnish the Air Historical Office with criticisms, additional facts, or interpretations.

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Legislation Relating to the AAF Materiel Program

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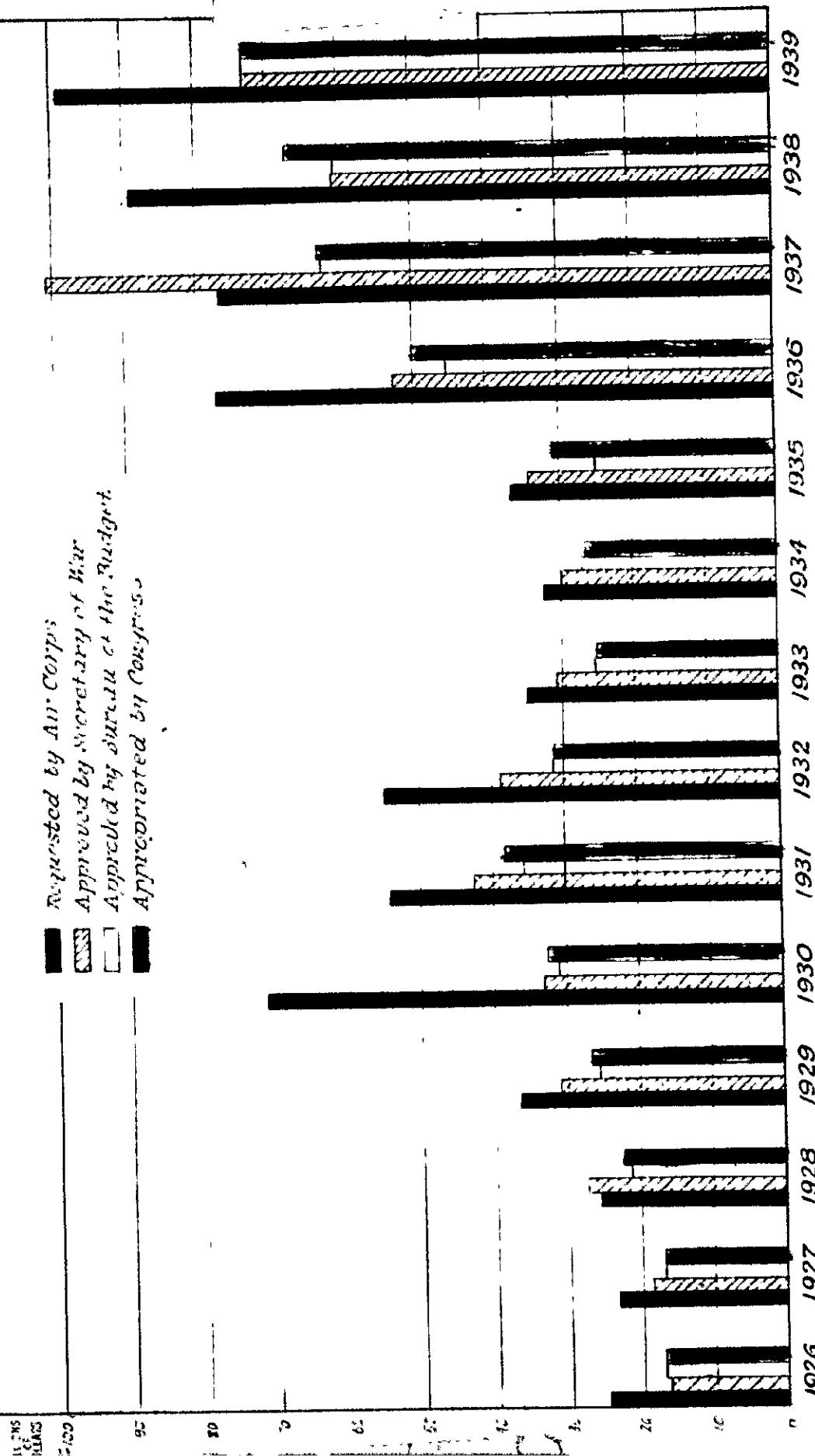
Chapter I

AUTHORIZATION AND APPROPRIATIONS FOR AIRCRAFT, SPARE ENGINES  
AND SPARE PARTS

On 2 July 1926 Congress created the Air Corps and authorized a maximum strength of 1,800 serviceable planes within five years. Because of action by the War Department and the Bureau of the Budget,<sup>1</sup> the Air Corps was not even able to accomplish this program in 10 years. (See Chart, on following page, and App. I.) By that time the Baker Board had recommended an increase of 520 planes, and Congress sanctioned this increase, the 2,320-plane program, on 24 June 1936.<sup>2</sup> Of this number there were on hand only 842 on 30 June 1937. It was expected that a total of 1,376 would be on hand within a year and 420 more by the end of the fiscal year 1939.<sup>3</sup> In an effort to attain the established objective, the Air Corps had submitted estimates of approximately \$100,000,000 for the fiscal year 1938, but the War Department Budget Advisory Committee had reduced these by \$13,000,000 and the final appropriation by Congress was only slightly more than \$77,000,000.<sup>4</sup>

In testifying on the military establishment appropriation bill for 1939, Gen. Malis Craig, Chief of Staff, stated that the program called for the procurement of 535 planes for the Regular Army and Organized Reserve from 1938 funds and 420 from 1939 funds. The purchase of these planes would fulfil the Baker Board objective by 30 June 1940.<sup>5</sup> The total amount requested for the Air Corps during 1939 was \$89,583,366 of which \$16,126,594 was necessary to care for contract obligation for 1938, thus

APPROPRIATIONS FOR ARMY AIR CORPS FOR FISCAL YEARS 1926-1939\*



\*FIGURES FROM CHART OF APPROPRIATIONS FOR ARMY AIR CORPS FOR FISCAL YEARS 1926-1939, APPROVED BY CONGRESS AND APPROVED BY THE BUREAU OF THE BUDGET, AND APPROVED BY THE SECRETARY OF WAR.

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leaving a net availability of \$73,556,972.<sup>6</sup>

Of the total appropriation requested, \$33,150,346 was for the purchase of 394 new planes by the Regular Army while 32 were to be procured by the Organized Reserve and 48 by the National Guard. This was a total of 474 against an expected washout of 193, or a net increase of 281 toward achieving the goal.<sup>7</sup> All of this sum was not sought as a direct appropriation, for contract authorizations of \$4,000,000 and \$5,126,894 were to supplement appropriations of \$19,150,646 and \$5,302,273 for airplanes and spares, respectively.<sup>8</sup> Maj. Gen. Oscar Westover, Chief of the Air Corps, explained that part of the increase in the item for spares was caused by calculating an allowance of 75 per cent instead of 50 per cent spare engines which he considered inadequate.<sup>9</sup> It was expected that the reduced unit costs resulting from mass purchase would enable the Air Corps to procure 502 planes rather than the number justified.

Despite the statements of General Westover, the House appropriations committee reduced the item for spares by approximately \$2,000,000--the difference between a 75 per cent and a 50 per cent allowance--and suggested that the major portion of that amount be used to meet current deficiencies in that item and that the remaining \$171,504 as well as \$600,000 of current unexpended funds be applied to research.\*<sup>10</sup> The Acting Secretary of War recommended the reinsertion of the amount necessary to procure 75 per cent spare engines, but the Senate committee refused the request.<sup>11</sup>

As approved, the act provided an appropriation of \$70,556,972 (of which \$16,126,894 was for contractual obligations incurred during the fiscal year 1938) and a contract authorization of \$19,126,894. It was stipulated that of the above sums not less than \$33,150,646 should be

\* For a discussion of research, see below, Chap. IV.

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applied to the procurement of new combat airplanes and their "equipment and accessories," including not more than \$1,691,044 for the procurement of spare engines and spare parts for airplanes procured by expenditure of fiscal year 1938 funds.<sup>12</sup>

In the fall of 1938 the Assistant Chief of Staff, War Plans Division, recommended that the Air Corps 10,000-plane program be approved by the Chief of Staff.<sup>13</sup> Approval was given on 25 November 1938, and the new program was to be a two-year project. By this plan--which, of course, had not received congressional sanction--the combat strength of the air arm was to be increased to 5,620 planes, with 2,705 active and 2,915 in reserve.<sup>14</sup> This program provided for the purchase of 8,030 planes within two years to supplement the 1,970 "on hand, undelivered, and scheduled to be procured from 1939 funds, less losses in [the] next two years." It was anticipated that 2,000 would be procured from government facilities and 6,030 from private industry.<sup>15</sup> The cost of this then-ambitious project was estimated at \$1,288,000,000 in addition to the 1939 appropriation and the estimates submitted for 1940. To maintain this number of aircraft would involve annual materiel expenditures of \$141,218,097 for 1,500 planes with government-furnished equipment and spare parts and \$12,035,620 for experimental research and development.<sup>16</sup> This program, prepared by the high officials of the air arm and approved by the War Department General Staff, was no doubt a reflection of the recognition of the powerful burgeoning influence of an air force in being.<sup>17</sup> It never received congressional approval, but was replaced by the 5,500-plane program in early 1939.

The increased realization of the necessity of building America's military machine, especially the air force, for hemispheric defense became

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more articulate as the European situation degenerated. In his message to Congress on 12 January 1939, President Roosevelt pointed out that the Baker  
16 Board report

of a few years ago is completely out of date. No responsible officer advocates building our air forces up to the total either of planes on hand or of productive capacity equal to the forces of certain other nations. We are thinking in the terms of necessary defenses, and the conclusion is inevitable that our existing forces are so utterly inadequate that they must be immediately strengthened.

To prepare the air arm for its role in defense, the President urged the appropriation of \$300,000,000 for the purchase of "several types of airplanes for the Army," noting that this should provide a minimum increase of 3,000, with the expressed hope that the placing of orders on such a large scale would materially reduce the unit cost and actually provide many more planes. President Roosevelt suggested that \$50,000,000 be made available immediately so that contracts could be placed to "correct the present lag in aircraft production due to idle plants."<sup>19</sup>

Newspaper reaction to the message was generally favorable, some papers implying surprise that the program had not been more extensive.<sup>20</sup> The Army-Navy Journal of 14 January 1939 emphasized that both services needed more planes and that the President had achieved balance in the program presented. The Journal felt that the President had "discarded the grandiose suggestions of diplomats and others, and . . . sought and took the advice of his experts, the responsible heads of the War and Navy Departments."

The expansion program had been under consideration by the Air Corps for some time, and on 13 January 1939 the Chief of the Air Corps submitted to the Chief of Staff a breakdown of the \$300,000,000 which the President requested. By this proposal \$170,000,000 would be used for materiel procurement--1,593 combat, 1,425 training, and 14 "miscellaneous"-type planes.<sup>21</sup>

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General Arnold stated that his program provided a nucleus as a "well-rounded air defense which would be wholly lacking if the whole \$300,-  
000,000 were devoted to the procurement of airplanes." The purchase of  
these 3,000 planes would bring the strength of the air arm to 5,500 ser-  
viable planes, of which 2,163 were to be held in reserve.  
<sup>22</sup>

To carry out the aircraft provisions of the President's message,  
Andrew J. May (D-Va.), chairman of the House Committee on Military Affairs,  
introduced H.R. 2780 into the House on 18 January 1939. This bill author-  
ized the Secretary of War to equip and maintain the Air Corps with "not  
to exceed six thousand serviceable airplanes" and empowered him to main-  
tain the number specified by replacing obsolete and unserviceable air-  
craft from time to time. This bill was exactly as submitted by the Plans  
Section, CGAC, except that originally it had been Section 3 of a more in-  
clusive bill "to increase the efficiency of the Air Corps."  
<sup>23</sup>

The War Department stated that the passage of H.R. 2780 or its com-  
panion bill, S. 842, "would be a major contribution to the cause of na-  
tional defense," and recommended favorable consideration. It was pointed  
out that a possible reduction in unit costs would permit the purchase of  
a larger number of planes than authorized by the bill, even though the  
amount of expenditure was fixed. It was therefore suggested that the  
committee on military affairs give consideration to the removal of the  
limit on airplane strength so that a greater number of planes could be  
procured.  
<sup>24</sup>

Meanwhile, the House Committee on Military Affairs had been conduct-  
ing hearings on various phases of the President's national defense message,  
and on 31 January H.R. 2780 was incorporated with other national defense  
<sup>25</sup>

AM 8-22, Chap. I

C

measures into H. R. 351<sup>c</sup> which was rejected on 7 February by H.R. 3791. The latter measure was identical with H.R. 3518 except that the authorized airplane strength was reduced from 6,000 to 5,500.<sup>26</sup> Testimony had already been taken on the various portions of H.R. 3791, and it was favorably reported on 3 February.<sup>27</sup> A minority report agreed with the intent of the bill but disagreed with Section 1 which authorized immediate purchase of the planes. The minority was of the conviction that procurement should be spread over three years so that the Air Corps would be in a better position to take advantage of the year-to-year developments. This view was expressed, during debate on the measure, in an amendment offered by Representative W. G. Andrews (N.Y.) on 15 February which sought to limit procurement to 1,000 planes per year except in case of a declaration of national emergency.<sup>28</sup> This was the occasion of considerable debate but was defeated by a vote of 133 to 136.<sup>29</sup>

One of the strongest speeches calling for an adequate national defense was made by Representative Dowdell Carter (Ohio) on 14 February. He characterized the authorizations of H.R. 3791 as the "irreducible minimum of what should be done at the present time." Carter stressed the importance of immediately beginning a program that would assure the creation of an adequate air force, and he quoted from a speech by Maj. Gen. Frank P. Andrews, Commanding General of the G.M. Air Force, to emphasize his point. General Andrews had said that<sup>30</sup>

air power is not a commodity that can be procured in the open market, no matter how much gold and silver may be available. Money will not buy it; desire will not create it. Timely foresight, based upon an intelligent conception of the potentialities

\* For other material features of the Bill, see below, Chaps. II and III.

of air power and its effects upon the destiny of nations is the only formula that can assure its development. . . . adequate air power cannot be created after the necessity for its need has arisen. Like a navy it takes years to build an air force.

None of the amendments affected the Air Corps materiel program, and the measure passed the House by a vote of 307 to 15 on 15 February.<sup>31</sup> In the Senate committee hearings, it was pointed out to General Arnold that he had been credited by newspapers with favoring the construction of 10,000 planes. General Arnold replied that the report was inaccurate and that he was for the 5,500-plane program "hook, line, and sinker, because I believe it is a program that is well planned, . . . balances the personnel with the airplanes, and . . . answers the problem of the aerial defense of the United States, and I cannot see any need at this time for anything more."<sup>32</sup>

The Senate committee increased the authorized strength from 5,500 to 6,000,<sup>33</sup> and this increment was justified, during debate, by the extent of the territory to be defended--the Western Hemisphere. This increase did not involve any additional appropriation but simply allowed procurement of more aircraft if the stipulated funds would allow.<sup>34</sup> Senator Bennett C. Clark (Mo.), however, pointed out that all who had testified before the committee had considered 5,500 airplanes as adequate, and since the bill did not limit the amount to be spent on planes, 6,000 might cost much more than the estimated \$170,000,000.<sup>35</sup> Despite repeated assertions that the measure was for defense only, it was attacked by some individuals who insisted that the only reason for wanting 6,000 planes was to prepare for intended entry into a war abroad. Others repeated the old argument that the way to keep out of war was to show

that the country was sufficiently strong to defend its own interests and  
shortly.<sup>36</sup>

As passed by the Senate on 7 March, H.R. 3791 authorized a maximum of 6,000 serviceable planes and an appropriation not to exceed \$300,000,000 "together with such annual appropriations as may be necessary to maintain such air force." These changes were agreed to by the House in conference committee, and the measure became Public Law No. 18 on 3 April 1939. \*<sup>37</sup>

Public Law No. 18 thus authorized the most ambitious expansion program which the Air Corps had ever proposed to Congress. It was felt by the Chief of Staff that the passage of this act was an excellent example of the effects of publicity and public pressure. Until pictures showing the bombings of women and children in Spain and China had been circulated the public was indifferent to the pleas for the necessity of creating additional air power. These photographs, however, developed public pressure and Congress made provision for "long-overdue appropriations for airplanes and antiaircraft materiel."<sup>38</sup>

During the course of debate on H.R. 3791 some doubt had been expressed as to the ability of the aviation industry to meet the requirements of the new program. The Aeronautical Chamber of Commerce of America felt, however, that the industry "would easily be able to take care of the proposed requirements." The production of approximately 1,000 additional planes for the next two years would require only a "very small portion of the actual capacity of the industry" which was estimated at 6,000 to 10,000 planes. The consensus was that the placing of additional orders would have the effect of "stimulating the industry and enabling

\* See Chap. III.

REF ID: A6512

See Appendix, Chap. I

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to use as civil aircraft. This was recognized as a major factor  
world wide.<sup>10</sup>

With the same intent as General Arnold, Macmillan, being  
elected on the recommendation of the British Parliament on 26  
January 1946, asked Sir Philip Wright and his committee to "examine  
as soon as possible the use of 2,000 aircraft as 'flying ships,' but that  
the use of such aircraft as 'flying ships' subject of scientific study in line  
of the aims, plans and operational missions, as outlined and agreed . . .  
and to submit a report on flying ships."<sup>11</sup>

In this case it is interesting to note that the Air Corps had been asked to use  
air Corps by 1st construction of four C-1 aircraft as flying ships  
and to procure a total of 4,000 C-1 and 1,000 C-40 on or before 2 July 1946  
and 3,000 C-40 on or before 24 June 1947. The inter-service plan was corre-  
spondingly established by the chairman, present-day J. R. Dill Snyder (USA).  
The Air Corps' plan was rooted in, as we know, the basis of a total  
authorization of 2,000.<sup>12</sup>

The original request for the Air Corps, 12,000,000, which  
included a total authorization of 12,700,000 and 10,100,000 to meet  
electro-magnetic needs of the program, a. m. G. C. in 1945, 20,-  
10,700; to be followed by another 170 air aircraft for the Army, and  
the additional authorization to follow, for the additional land and  
air mobile forces, since it was expected that 270 planes would be rendered  
unserviceable by end of the year, whose air crews will not increase  
the combat strength of the Army, were originally spares for planes and  
air crews would require 11,800,000 for combat participation.<sup>13</sup>

General Arnold is quoted that the Air Corps was asking, for flying

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planes this time because it was approaching the 2,320 limitation of the Baker Board. Although that number would probably be exceeded by 30 June 1940, there would be only 1,096 modern combat planes on hand by 30 June 1939. The Chief of the Air Corps continued by saying that the planes out of commission because of maintenance difficulties would reduce this number to 962 aircraft actually fit for combat.<sup>43</sup>

While hearings on the regular 1940 appropriations bill were still in progress, supplemental estimates for the use of \$6,000,000 were submitted in anticipation of the fulfillment of the President's request of 12 January 1939. These estimates involved the procurement of an additional 565 planes and were incorporated with the regular 1940 estimate.<sup>44</sup> Four hundred of these planes were to be pursuit, 125 attack bombers, 14 photographic, and the remainder what was then termed "miscellaneous combat." The total cost of these, plus 25 per cent spares, was estimated at \$16,448,370.<sup>45</sup>

The House Committee on Appropriations recommended that \$10,505,988 of the supplemental estimates be made as contractual authorization and that the total direct appropriation for the Air Corps be \$4,737,291.<sup>46</sup> It was stressed that the supplemental portion of the bill sought to reach and go beyond the 2,320 goal which was not thought attainable when the 1940 estimates were first made. Immediate availability of the supplemental estimate was to spur industry to produce more rapidly for the larger program looked to in 1940-41. That confusion existed as to the exact program to which the 565 new planes belonged was indicated by the committee's statement that they "may fit into the 2,320 program as replacements, or be the entire expansion thereof for the present, or may

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be the first increment of an expansion toward any objective ranging from 2,320 to 5,500 airplanes.<sup>47</sup> The committee was doubtful that delivery of these planes could be effected by 30 June 1940. It stated that on 31 December 1938 there were 583 planes on order, some under funds or contractual authority which had become available as far back as 1 July 1936. Also, 748 planes which had been authorized had not been ordered. When the 219 of the regular estimates and the 565 of the supplemental estimates were added, the total became 1,860 planes for delivery in the next 17 months. As the committee reported, "Past performance suggests that to be an exceedingly ambitious program."<sup>48</sup>

On the floor of the House, Snyder again indicated that a maximum of 1,120 planes was already authorized and that without waiting for the enactment of legislation authorizing 5,500 planes, the President was free to submit estimates for an additional 1,235 planes.<sup>49</sup> In spite of some critical and assertions that the expansion program was instigated by "propagandists of the aviation industry" who sought profitable orders from the Army and Navy, the House passed the measure on 3 March 1939.<sup>50</sup>

The Senate appropriations committee reduced by \$9,882,567 and \$9,030,625, respectively, the amounts of contractual obligation for new aircraft and their equipment and the amount required to be applied to combat airplanes. The figures that read \$57,484,932 and \$36,113,200, respectively.<sup>51</sup> This action was a result of a letter of 6 March 1939 from the Secretary of War to the chairman of the Senate committee, pointing out that the above reductions were the amounts to be expended for spare parts.<sup>52</sup> This change was agreed to by the House in conference committee, but the Senate receded from its \$1,000,000 increase in research funds. The measure became Public Law No. 41 on 23 April 1939.<sup>53</sup>

The first step toward supplying funds for the new expansion had been taken. Combined with the regular 1939 funds the new appropriation amounted to \$94,737,231. Of this amount, \$2,000,000 was to be chargeable to the 1938 appropriations, and \$15,320,000 was to satisfy contractual obligations for material items procured during the fiscal year 1939. Contractual authorization of \$32,205,980 was provided, and it was stipulated that of the appropriations and contract authorizations, \$57,424,062 "shall be applied to the procurement of new airplanes and their equipment and accessories, of which amount . . . not less than \$56,113,200 shall be applied to the procurement of combat airplanes and their equipment and accessories."<sup>54</sup>

Though there was considerable confusion in some places as to the program for which the \$60,000,000 supplementary estimate was intended, it became clear very soon that it was a definite part of the 5,500-plane program. Additional estimates were submitted soon after the passage of Public Law No. 18 for the fulfilment of the Air Corps portion of the general expansion program. General Craig stated before the House Committee on Appropriations that the need for an augmented and improved air force was the result, principally, of three conditions: (1) the state of political tension throughout the world and the vast increase of armament by all world powers; (2) the rapid development in aviation and the consequent emphasis on aerial warfare; and (3) the announced government policy of defending the Western Hemisphere against aggression.<sup>55</sup>

The estimates involved \$250,000,000 of which the direct share of the Air Corps was \$7,700,155 in cash appropriation and \$44,000,000 in the contractual authority.<sup>56</sup> The major portion of these sums was to be used to procure 2,437 airplanes, exclusive of the aircraft provided for in the

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1940 budget was to be given \$10,000,000 supplemental authority to which had been incorporated in the regular 1940 military appropriation bill. General Arnold stated that this would bring the total to 5,300 planes within two years (by 30 June 1941), and that it took the capacity of the aircraft industry was sufficient to build three divisions.<sup>57</sup> The Chief of the Air Corps wanted only that all the funds so far authorized had been obligated with one exception of the funds for 125 attack bombers.<sup>58</sup> He continued by indicating that the pursuit contract situation was the cause of reducing; the units could not promptly procure the remaining of the major portion of the previous supplemental authorization for pursuit aircraft. The funds requested for additional planes (\$22,799,931) would be used primarily for other types, and the program would thus be brought back into balance.<sup>59</sup> General Arnold stated that this would require the procurement of 500 planes and an annual appropriation of \$10,000,000 to maintain the service at a peak of 5,800 planes.<sup>60</sup>

The item for procurement and for war emergency for aircraft and aircraft equipment involved a total outlay of \$6,224,101. It was explained to the committee that this provided for 70 per cent share (includes interest) of the 50 per cent limitation under which the Air Corps had entered during the previous year.<sup>61</sup>

It was reported on 12 June 1939, that no one involved an expenditure of approximately \$100,000,000 for planes--\$2,390 for the regular Air Force and 177 for the National Guard.<sup>62</sup> The committee agreed with the "unconditional" procurement of 1,37 planes for a ration, but made the procurement of the remaining aircraft contingent upon the President's decision as to what portion of the would be given to national defense.<sup>63</sup> Representative D. L. White (D.,) offered an amendment in the House on 21 June 1939 to

reduce the number of planes to be purchased by 1,283 and to authorize the procurement of those only when the President felt that a national emergency justified their purchase.<sup>64</sup> In opposing this amendment, Representative W. J. Miller (Conn.) warned of the possibility that the United States might be plunged into war sooner than was thought and that the entire program should be carried out in order to learn more of productive capacity and possible "tu -". The proposed restrictive amendment was rejected by a vote of 217 to 150 on 22 June; and Powers' attempt to recommit the bill was unsuccessful, as the measure was passed by the House on  
the same day.<sup>65</sup>

The Senate committee amendment did not concern Air Corps items, and the measure became Public Law No. 164 on 1 July 1939.<sup>66</sup> The Air Corps was given \$30,727,055 cash appropriation and \$1,000,000 contractual authority. The greater portion of these sums was for the procurement of aircraft and parts, and they brought to \$300,000,000 the appropriation for the Air Corps expansion program as outlined by the President on 12 January 1939.<sup>67</sup> Congress had acted quickly, efficiently, and without much quibbling on the Air Department's requests to meet what were considered the minimum needs for national defense. Within slightly less than three months Congress had made \$261,670,924 available to the Air Corps. This was one-half as much as the Army had received in the 14 preceding fiscal years and provided for the procurement of 3,251 planes--or approximately twice as many as were on hand at the beginning of 1939.

In March 1939, Nazi Germany had lengthened its long line of aggressions by occupying the Sudetenland, and on 1 September 1939 she moved into Poland, bringing open warfare to the Continent. Seven days later President Roosevelt proclaimed a state of limited national emergency,<sup>68</sup> and steps were taken to preserve the neutrality of the United States.<sup>69</sup>

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The preliminary estimates for fiscal year 1941 had been submitted by 15 August 1939 and provided for 496 planes at a cost of \$39,450,000. This procurement was considered a "replacement program based on a prediction as to the number of planes that will occur as obsolete and as to the number of crashes."<sup>70</sup> The cost of several of the types of planes had increased rather than decreased; the result was a deficiency in previous appropriations for planes of approximately \$16,000,000.<sup>71</sup> It was planned to care for this deficiency by transferring it ~~at~~ from the appropriation for spare engines and parts, leaving \$10,464,966 for the latter category.<sup>72</sup> This, however, would leave a deficiency of \$25,894,013 in spare engines and spare parts. To make up part of this deficiency the Air Corps wanted a 1941 appropriation of \$10,250,000 and hoped to balance the remainder--at least to a considerable extent--by the "employment of airplanes in reserve." Since, however, all plane contracts--except \$16,000,000--had been awarded, the War Department Budget Advisory Committee felt that it would be impractical to unbalance the program by the above action. The 1941 estimates, therefore, called for \$39,450,000 for planes, \$12,872,792 for spare engines and parts, and \$8,104,937 for maintenance and operation. Included in the last item was \$10,250,000 for 1940 spares. An item of \$79,505,983 was included for the payment of contract authorization.<sup>73</sup> Conditions had changed drastically by the time these estimates reached Congress.

Shortly after the outbreak of the European conflict the Air Corps submitted to the General Staff estimates for 500 reserve airplanes, a number which would bring the total strength to 6,000 craft. The cost of this program was estimated at \$19,789,581.<sup>74</sup> The cost of the planes was refigured at the suggestion of the Assistant Chief of Staff, G-4 and

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resubmitted on 17 October 1938. This plan, it was provided by the 2<sup>nd</sup> of the 500 planes which would be needed to fight the Germans. If the heavy bombers were secured from Consolidated, the total cost would be 132,126,549, but if secured from Boeing, the total expenditure would be only 116,325,373. These estimates included heavy armament equipment, spare parts, and  
parts, but not signal or ordnance items.  
<sup>75</sup>

The opportunity for the presentation of these estimates did not come immediately, but on 10 September General Arnold suggested that in all future discussions on Congress the number of planes to be procured be given to Congressmen in executive session only. He felt this procedure was justified by the realization that airplane manufacturers "note our cost estimates in our defense of our budgets and then cut the pattern of their costs to almost identical figures." If they did not receive this information, the Air Corps might be able to buy cheaper planes. The Chief of the Air Corps added that "there is also, of course, the added possibility that these counts and numbers of airplanes constitute information which should not be kept from foreign sources."<sup>76</sup>

The Air Corps steadily proceeded with the fulfillment of its 5,000-plane objective in the latter part of 1938. Meanwhile, the American public was realizing more and more of a shortage of air power, especially bombardment aircraft. The first indication of congressional desire for the further expansion of the Air Corps came in the suggestion of Representative Butler, on 12 January, 1940, that the authorized strength of the Air Corps be raised to 8,000 planes.<sup>77</sup> The expansion program was drawing both official and adverse criticism from varied sources. On 6 February 1940 the Washington Evening Star reported Secretary of the Treasury Laney's estimate of a "considerable waste of aircraft in-  
vestments" due to "a frantic business methods."<sup>78</sup> Representative Thomas

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L. Martin (Lois), in commenting on this above article, attributed the activity of the aircraft industry to the lifting of the arms embargo, asserted that the domestic economy was not on an even keel, and maintained that America was plungan<sup>78</sup> toward war. He felt that "we are setting in motion factors which will prolong the war and which will cause a large industry in our land to desire the continuation of the war and which may even plunge us headlong into the war."<sup>79</sup> These, and similar comments in favor of or opposed to military expansion, were not uncommon prior to entry of the United States into the war.

Columnists also questioned the adequacy of the 5,500-plane program for hemispheric defense. Frazier Hunt pointed out the devastating possibilities of bombardment and suggested that Congress vote "hundreds of these peace guarantors [Tony-range bombers.]" He admitted that it might not be advisable to concentrate on fleets of this type of aircraft immediately, but urged the creation of manufacturing facilities to turn them out when needed.<sup>80</sup>

The House Committee on Military Affairs had considered the possibility of retarding Air Corps procurement in order to obtain the very latest types of aircraft. General Marshall, on 20 January 1940, pointed out that this would be undesirable and would accomplish nothing; since "there is always a later type being manufactured." General Marshall also refuted the charge that the Air Corps was out of proportion to the rest of the Army.<sup>81</sup>

The 1941 military establishment appropriation bill provided for \$212,426,072, including a contract authorization of \$25,730,500. The net sum available for new obligations, however, would be only \$176,520,084.

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since \$79,305,888 was required to met 1940 contract obligations. This sum would provide for the procurement of only 496 planes as compared with the purchase of 3,016 in the fiscal year 1940.<sup>82</sup>

When the Chief of the Air Corps gave his testimony on 7 March 1940, the entire 5,500-plane program was reviewed. General Arnold pointed out that the \$300,000,000 program had become \$302,027,000 because of an increase of \$2,000,000 for research and development and \$27,000 to cover the cost of preparing a comprehensive digest of data on Alaska. Of this amount the direct appropriation for the Air Corps was \$180,170,484. For planes and accessories and equipment \$163,175,440 of the allotted \$177,-  
016,082 had already been obligated. All contracts provided for delivery by 30 June 1941.<sup>83</sup> Delivery by this date was reasonably assured by the penalty clause which provided for 1/15 of 1 per cent for each calendar day of delay, but was not to exceed 15 per cent of the unit price of any plane.<sup>84</sup>

In explaining the estimates, General Arnold indicated that for new airplanes, spare engines, and spare parts, \$62,080,385 was requested. This was \$117,195,786 less than appropriated in 1940, and this request was only for replacement of predicted losses. The 1940 appropriation, however, had not covered the procurement of the necessary spare engines and spare parts because of the increased cost of planes. This increased price is attributed to several factors: (1) the liquidating damage clause, guaranteeing the delivery date of planes; (2) increased performance, necessitating the procurement of planes with performance superior to those available when funds were requested; (3) the guaranteed performance of the aircraft as specified; (4) "fear of labor difficulties and unsettled conditions of the world which

might affect the procurement of operating bases and depots to be operated and maintained<sup>85</sup>; (5) the splitting of awards; (6) the limitation of profits.<sup>86</sup>

When the 1941 estimates were originally drawn, the anticipated deficiency was only \$10,250,000. Since that time it had increased by \$20,000,000, and this was cared for in the supplemental estimates for that amount.<sup>87</sup> The total appropriations would procure 496 planes and provide for the deficiencies in spare engines and spare parts.<sup>88</sup> The House Committee on Appropriations questioned the advisability of purchasing the 496 planes for reserve and thought that only the types of planes not already provided for in the reserve should be procured. This was justified on the ground that the purchase of 2,200 planes for the reserve had been intended to accomplish an acceleration of the industry. Since many foreign orders had been secured and the rate of production had greatly increased, the fundamental reason for a large reserve had ceased to exist.<sup>89</sup>

The committee reported H.R. 9209 on 3 April 1940, recommending a reduction of \$19,410,034 in the cash appropriation for new aircraft so that only 57 instead of the requested 496 would be procured.<sup>90</sup> The Bureau of the Budget estimates had provided for \$25,559,889 cash and \$25,780,500 contractual authority for the planes. If only 57 were procured--as recommended--\$6,143,855 in cash was provided and the contractual authority eliminated.<sup>91</sup> The 1940 appropriations were short \$30,250,000 apart from the 186 planes which had not been ordered on 7 March 1940 and for which there was in reserve \$9,341,542, and the committee explained:<sup>92</sup>

Rather than defer contracts until the shortage could be regularly made up, the [War] Department chose to tie up funds that had been made available for the procurement of spare engines and spare parts

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for airplanes and engines. To clear up the situation thus brought about the regular budget included \$10,250,000 in cash and a supplemental sum, i.e., . . . calling for further supplemental authority of \$2,000,000.

Until a full reserve, should be made, on account of fuel yet deliverable and to air relations, to foreign orders, the committee proposed a limit of only one-half of our supplemental request.<sup>32</sup> The total Air Corps appropriation recommended was 105,702,102 cents and \$10,000,000 contractual authority as opposed to our requested 140,416,172 and \$15,700,000, respectively.<sup>33</sup>

In presenting a measure to the Senate, Representative Parker explained that the Air Corps was not given to get 2,000 (the reserve component) of the 5,000 planes until certain foreign orders had been filled. This arrangement would not affect the regular force but would keep the American projection facilities as far as possible and could help the Air Corps to get a later and improved order. If the 1,200 planes could be deferred for the present, the committee felt that all but 57 of the 123 planes could also be deferred. The total savings effected would be \$2,000,000 cash and \$2,700,000 in contractual encumbrances.<sup>34</sup> An attempt to recommit the bill with instructions to reduce the total by 10 per cent was defeated, and the measures passed the house on April 1, 1910.<sup>35</sup>

The Fiscal Officer, in turn, called the attention of the Budget Officer of the War Department to the fact that . . . ACW as it stood did not include the amount for spare engines and spare parts in the sum which was recommended for new planes. The total appropriation could be the same under this proposal, but the total would run for an additional 109 planes should be provided. This would increase the aircraft material item to \$3,500,000 for the Air Corps and 1,921,165 for ordnance and signal equipment.

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ibid.

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Just at this time the Blitzkrieg ended in Europe and the German offensive was unleashed on the Scandinavian countries. Hitler's tanks had concluded hearings on U.S. codes of the Low Countries and France had been struck with lightning rapidity. President Roosevelt, addressing Congress on 16 May 1940, took cognizance of those "new powers of destruction" and asserted that "no old disease is so strong that it requires no further strengthening, and no attack is so unlikely or impossible that it may be ignored."<sup>57</sup> The president continued by emphasizing that American planes were not inferior to those of other nations, but that "one belligerent power" not only had more planes than all its opponents combined but also, flying production capacity far greater than that of its opponents. American productive capacity, however, had risen from 6,000 planes to more than 12,000 planes per year, but in last 12 months. This was not considered enough. "I should like to see this action geared up to the ability to turn out at least 50,000 planes a year. Furthermore, I believe that this action should plan for this time a program that would provide us with 50,000 military and naval planes."<sup>58</sup> To step up production and provide for increments in the combat arms, the Executive asked for an immediate direct appropriation of \$50,000,000 and contract authorizations of \$286,000,000, in the Army, Navy, and Marine Corps.  
<sup>59</sup>

Newspaper reaction was almost universally favorable, but as usual some comments were colored by partisanship. The Boston Advertiser of 16 May declared that "if the villain had asked for 100,000 planes and \$2,000,000,-000 the people of this section would not have cavilled." Some papers noted that the malaise for the nation was greatest when 50,000 planes were mentioned and that it was plain that "the first essential of national defense

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for the United States is an air force superior to any that can be brought against us."<sup>100</sup> The Det. Times Opinion was one of the critics of the President's proposal. It stated, in part: "Talking about an annual plane production of 50,000 is like showing a hen an ostrich egg with the suggestion that there is an example to emulate. . . . The President was a chaps doing a bit of vigorous blustering for the benefit of certain foreign listeners."

In spite of the remarkable advances made in the preceding 12 months, the air arm was still inadequate in size, type of aircraft. The Chief of the Air Corps stated on 17 May 1940--the day after the President's message--that the Air Corps had only 421 pursuit planes and 261 of these were in foreign possessions. The delivery of this type of craft would not even meet training requirements prior to December. The transfer of the French pursuit-plane orders to the Air Corps would not help much because necessary modifications in those P-36's would delay delivery, and even then the planes would be little better than those on hand.<sup>101</sup>

On the day after the President spoke, supplemental estimates were submitted to the Senate Committee on Appropriations which was still considering the regular 1941 estimates. These estimates provided for a total of \$364,000,000 of which \$30,424,576 cash and \$73,500,000 contract authorization were for the Air Corps.<sup>102</sup> The 2,400 planes provided for in the supplemental appropriation request, with the 166 desired from the initial appropriation,<sup>103</sup> would bring the Air Corps strength to 8,066 craft.<sup>104</sup> The estimates had provided, and the committee approved, that these funds for new aircraft could be expended without reference to the provision of Public Law No. 13 of 3 April 1939, which limited the Air Corps strength to 6,000 planes.<sup>105</sup>

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Senator John J. Connor (Conn.) proposed that the needs of America in plane strength be ascertained and that "at any cost" the sum of the opinion that the appropriations in H. R. 8002 were inadequate if the goal of 10,000 planes a year was to be achieved and said it was "preposterous to hold out such an idea to the people in view of the total appropriations carried by the bill." He concluded with the assertion that he did not think such a goal was contemplated.<sup>106</sup> Considerable controversy ensued over the productive capacity of the aircraft industry, with estimates ranging from 7,000 to 17,000 per year.<sup>107</sup> Whatever the productive capacity, all of the senators felt that some provision should be made for delivery to the Army as soon before as possible of planes to foreign purchasers.

The annual bill was passed by the Senate on 22 Apr 1930,<sup>108</sup> referred to in conference committee, and became public law No. 611 on 15 June 1930.<sup>109</sup> The total Air Corps appropriation was \$265,663,413 cash and \$103,500,000 contract authorizations. Of these amounts, not less than \$123,741,694 was to be allotted for new airplanes and their equipment and accessories; \$21,601,791 of this sum to be applied to combat planes. The limitation to \$3,000 planes was now applicable to the expenditure of these funds which were to remain available until 30 June 1932.

The Congress was quick to act in other ways to pave the way for the execution of the President's program. On 17 Apr 1930 "representative" introduced H. R. 8002 which, among other things, proposed the removal during the fiscal year 1931 of existing limitations on the number of serviceable airplanes which the Air Corps could acquire.<sup>110</sup> Three days later he introduced H. R. 8025 which provided the instant but placed 10,000 number of planes at 10,000 for the fiscal year 1931.<sup>111</sup> The following day, L. L. DeLoach incorporated the provisions of H. R. 8002.<sup>112</sup>

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The Committee on Military Affairs reported H.R. 9850 on May 22, the same day that the Senate committee reported S.4025.<sup>112</sup> In support of the latter, the Secretary of War had pointed out that the existing authorization was inadequate and unless the limitation was suspended the number of combat planes would be reduced to a dangerous level because of the training program requirements.<sup>113</sup> The House moved as quickly as had the committee and passed H.R. 9850 by a vote of 392 to 1 on 24 May.<sup>114</sup> After changes by the Senate and some compromises in conference, the Air Corps was given a free hand in the acquisition of aircraft during the fiscal year 1941.<sup>115</sup>

The provision of this act, Public Law No. 703, was of potential value only until money was provided for the procurement of additional planes. Even before the regular military appropriation bill for 1941 had become law on 13 June, the Blitzkrieg had swept to the Atlantic, and the English had abandoned most of their equipment at Dunkerque on 3 June. Supplementary estimates for 1941 had, however, already been submitted to the House, but they did not contain provisions for 8,000 additional planes until 29 May. Until that time it was thought that engines could not be provided for them, but conferences with the aircraft industry in the weeks following the 16 May message of the President had resulted in "reasonable assurance" that these additional engines could be provided.<sup>116</sup>

On 31 May the President sent another message to Congress in which he emphasized that the events of the past two weeks made necessary the placing of additional orders with industry both to provide an early expansion of existing production facilities and to obtain increased quantities of special weapons. The achievement of this end involved large appropriations--over a billion dollars--but he felt that "for national safety the needs are urgent."<sup>117</sup>

Funds requested for the Air Corps were \$120,839,895 cash and \$109,-  
250,897 contract authorization for 1941. The latter sum was entirely for  
planes and their accessories and equipment while all but \$17,000,000 of the  
larger amount was for the same purpose. The House committee recommended an  
increase of \$33,910,867 in the cash appropriation,<sup>113</sup> and the Senate added  
\$6,500,000 which was later requested for purchase of aircraft engines.<sup>119</sup>  
On 26 June slightly more than \$400,000,000 became available to the Air Corps  
for the preparation of that arm as an effective fighting unit, and all but  
\$17,000,000 was for the procurement of aircraft and accessories.<sup>120</sup>

On 15 June, Senator Claude Pepper (Fla.) introduced S.J. Res. 278 to  
authorize the President to place orders at once for 50,000 aircraft of the  
"most effective type and design for modern warfare and all the necessary tra-  
gments, and direct that such aircraft and carts be ready for delivery at a  
date to be fixed by the President."<sup>121</sup> The Secretary of War reflected the  
opinion of the Air Corps when he wrote to the Chairman of the House mili-  
tary affairs committee that the resolution was unnecessary since the Pres-  
ident had all the authority "more than that given in the resolution."  
This authority was contained in the National Defense Act of 1916 and was  
to be used only in case of a real or threatened war.<sup>122</sup>

Before the end of June, France had capitulated to Germany and the  
threat of war loomed more and more apparent to the American people. On  
10 July 1940 President Roosevelt submitted new estimates to Congress. He  
emphasized that the principal lesson of the war so far was that "partial de-  
fense is inadequate defense. If the United States is to have any defense,  
it must be total defense." To carry forward this total defense, he re-  
quested funds for 19,000 additional planes for the Army, 4,000 for the

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Army, and for which it was thought to total to \$1,111,111.7 cash  
and \$2,030,000 contract authorization.<sup>123</sup>

The Air Corps portion of the bill provided \$20,000,000 cash and \$1,000,-  
000 contract authority. It was submitted during April with several  
amendments indicating that full authority could be taken of the amount pre-  
pared for from the Korean conflict.<sup>124</sup>

The Air Corps was converted on 11 July. At this recommendation of the 1st, 1931  
plan, including accessory equipment and spare engines and other parts, it  
obtained for the Air Corps. The amount for the items was to be \$1,-  
<sup>125</sup>  
207,182,110.

Before the start of combat, several requests were made by the Air Corps  
regarding delivery of all the 14,000 planes ordered. Also it was  
requested that the 1st, 1931, no Army or Navy aircraft be turned over  
to foreign nations. U.S. foreign nations, especially France, had enjoyed  
an advantage over the Army and Navy because they had been willing to pay  
any price for aircraft. "It has been pulled into a hole, and the  
country of the U.S. is "no place" in which to do anything or say anything without  
being deferred to a foreign power. The new aircraft would be more expen-  
sive because of the earlier delivery demand and the longer time; and to  
get this delivered,<sup>126</sup> changes in Air Corps procurement plans were made by  
the Senate committee,<sup>127</sup> and on 5 August 1950 by a resolution for  
the Air Corps were granted in excess of the sum originally present.<sup>128</sup>

At such an initial point of financial planning, and it was not brought  
up, forcibly to the concerned officials by necessity of acquiring more  
planes as quickly as possible. At this time a appropriations of \$0,000,-  
000 cash and \$0,000,000 contract authorization were sought in amount.

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General Brett stated that in fiscal year 1940 and in 1941 (through the first supplemental appropriation) approximately \$600,000,000 had been appropriated for airplanes and accessories. No funds were provided for accelerated deliveries and the "costs incident to overtime, increased shifts, and the cost of accelerating deliveries of raw materials." The best possible estimate of the costs of this was 20 per cent of the airplane and accessories funds, so \$120,000,000 had been requested.<sup>122</sup> Congress quickly granted this request.<sup>123</sup>

In the first 10 months of 1940 such rapid changes had occurred that considerable confusion existed, and some doubts were entertained whether the goals could be achieved. On 7 September 1940 General Arnold suggested that in view of the magnitude of the problems further procurement planning be deferred. "It is not practical," he continued, "in the present chaotic state of the aircraft industry, to attempt to plan for production at levels which now seem almost impossible of attainment."<sup>124</sup> The public, having access to only partial information and hearing widely divergent figures on aircraft production and procurement, was quite confused. The Hartford (Conn.) Times of 19 September 1940 called attention to a statement of William A. Drude that the Army and Navy would have 11,000 combat planes within 39 months, at the same time that the Army was sending "hurry-up" letters to aircraft manufacturers for immediate start of a vast program to build 14,394 fighting aircraft. The Times felt that it was not surprising if the people were confused when they tried to understand what was being done. "It is too much to expect the average citizen to have any accurate knowledge of the actual aircraft program, or, indeed, of the whole defense picture."<sup>125</sup>

For a discussion of "expedition, production, see below, Chap. II.

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By the end of 1940 Congress had initiated an enormous expansion of the Air Corps. The 6,500-plane program had not only been authorized (5 April 1939) but within a few months provisions for its fulfillment had been made. In the Military Establishment Appropriation Bill for 1941, Congress, refusing to limit the Air Corps program to 6,000 planes as proposed, provided for the purchase of 2,066 new aircraft. Not satisfied with the veiled limitation in this statute, Congress on 2 July 1940 removed all restrictions on the procurement of planes for the fiscal year of 1941. Meanwhile the President had called for 50,000 planes for the Army and Navy, 26,500 of which were to be allocated to the Army. Furthermore, he set the goal of America's annual production capacity at 50,000 for the United States and her friends.<sup>133</sup>

As a result the second supplemental appropriation bill for 1941 instituted the 18,000-plane program which was to be fulfilled by 1 April 1942. In order to finance this program Congress, during the calendar year of 1940, appropriated or authorized the expenditure of a total of \$2,435,174,558 for 18,641 planes, 11,147 of which were to be tactical. By 30 October 1940, approximately six weeks after the last appropriation, contracts for these planes had been let. In addition, the statute of 10 November 1940 provided for 5,000 bombers per year. Furthermore, the so-called 12,000-plane program for 1943, exclusive of foreign shipments, was approved.<sup>134</sup>

The rapid expansion of the Air Corps was as follows:<sup>135</sup>

|  |               |
|--|---------------|
| Number of project planes on hand on 30 June 1940 .....                             | 2,755         |
| Number of project planes on order on 30 June 1940 .....                            | 5,829         |
| Number of planes authorized under U.S. 2932 (2,000)                                |               |
| and U.S. 10055 (2,181) .....   | 4,247         |
| Number of planes included in War Department 'Unitized' program, 30 June 1940 ..... | 14,794        |
| The 12,000-plane program for 1943 .....  | <u>12,000</u> |
| TOTAL .....  | 36,225        |

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The plans for war emergency appropriation will be made by October 1, 1940  
and to have been delivered by 30 June 1941. To avoid "deep valley" in  
the delivery curve after "Feb 1940," it was thought necessary that the  
government make a firm commitment to the aircraft industry by approving  
the fiscal year 1941 appropriation, <sup>136</sup> 1 March 1941.

Before the 1941 estimates were considered by Congress, steps were taken  
to provide the \$300 million which the President had approved on 16 November  
1940. The House committee reported on 21 March 1941 the fifth supplemental  
appropriation bill for 1941 recommending direct appropriation of \$1,024,-  
040,000 and contract authorization of \$2,056,123,234 for the War Department.  
Of these amounts the Air Corps was to receive \$10,233,000 and \$534,025,770,  
respectively. The purpose of these funds was as follows: \$1,000,000,000  
for the 8,000-bomber program (including incidental equipment to be furnished  
by the Signal Corps and Ordnance); \$3,000,000 to meet current deficiencies  
caused by increasing costs; and \$40,238,140 for the 1,426 planes deferred  
from the third supplemental appropriation because of lack of bomber-producing  
facilities. The total sum to be spent for all aircraft and spares was \$1,825,-  
111,200. <sup>137</sup> This would increase the cash appropriation for the Air Corps by  
\$4,000,000, <sup>138</sup> but these funds were not for the material items mentioned  
above. The \$2,052,130,000 sum was appropriated and was to remain available un-  
til 30 June 1942, but the contract authorization expired on 30 June 1941.  
A portion of these appropriations was originally contained in the fiscal year  
1942 estimates, but was deleted at this time in order to hasten the fulfilment  
of the 12,000-plane program, \* which received considerable attention in the  
hearings on the fiscal year 1942 estimates. <sup>139</sup>

\* Large appropriations were given to the Secretary of War to expedite  
production. (See below, Chap. II.)

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Meanwhile the 12,000-plane program has been under discussion. On 20 October 1940 the Under Secretary of War requested comments from the Chief of Staff on the British request, or a productive capacity of 12,000 bombers a year. The Chief of Staff indicated that this additional capacity was necessary, if a annual production of 36,000 military-type planes directed by the President was to be reached, this was considered to be justified as a "precautionary measure" in view of existing world conditions. Subsequently, a breakdown of the British share (12,000 planes) of the "36,000 annual production rate to be produced in FY 1943" was furnished to Madison, who requested on 5 February 1941 that cost be advanced to fiscal year 1941. Thus, estimates for 12,000 planes, in addition to 12,000 in the lend-lease bill, were considered by the Bureau of the Budget, and on 18 March 1941 Madison and the Under Secretary of War requested that they be forwarded. The Chief of Staff emphasized that a monthly production rate of 3,000 by July 1942.

cannot be sustained as a military requirement unless we are willing to scale up to the production for an offensive campaign in the air against a foreign power. As a precautionary measure against the possibility for such a campaign, financial means for their production could be requested. The program probably cannot be defended as essential to a production program sufficient to enable the British to combat with an estimated German production of 8000 planes a month.

The transfer of planes under the recently passed Lend-Lease Act (11 March 1941) is closely associated with this particular program. General Marshall pointed out to the Secretary of War that there was then pending before the Appropriations Committee of the House "approximately two billion dollars for equipment, other than or in 12,000 airplanes-- which is desired for transfer to the British. The addition of the 12,000 [British] airplanes proportionately brings the total to four billion dollars."

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Since this equipment could not be transferred under the lend-lease bill, special legislative authority would be necessary. Advice was sought as to (1) the inclusion of the second 12,000 planes in the appropriation requests, and (2) the granting of authority to transfer these planes as well as the \$2,000 provided for in the fifth supplemental appropriation.

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On March earlier, 13 March 1941, the chief of the Air Corps Materiel Division deemed it "absolutely necessary" that both the first \$2,000 and the British 12,000 programs be all issued concurrently. Congress should quickly process these funds so the balance would be available for immediate conclusion of contracts. As of the contract was negotiated by April, a "very serious lag" in production in 1942 was feared.<sup>142</sup> Robert Lovett, Assistant Secretary of War for Air, . . . also of the opinion that funds for the 12,000-plane program should be immediately requested, for "the maintenance of productive capacity is a true measure of air power than the number of planes at no a given moment." He thought that the authority to make the various transfers to the British could be sought later, since the articles would not be available for some time.<sup>143</sup> The Secretary of War was in accord with the above sentiments and directed the War Department to take the necessary steps to effect plans for the procurement of 12,000 planes, estimates for which were included in the fifth supplemental appropriation for fiscal year 1941. As noted above, as of the 1942 fiscal year appropriations were advanced to the fifth supplemental for 1941, so that the remaining 1942 Air Corps estimates called for \$1,264,100,000 cash and \$104,256,995 contract authorization. The major items under new cash and contract authorization of \$733,413,017<sup>144</sup> included \$74,317,819 for a deficit in fiscal year 1941 procurement caused by higher costs, \$0,000,000

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for spare engines, and \$164,700,000 for spare parts for the 3,600 bombers and 1,425 other planes provided for in the fifth supplemental for 1941.<sup>146</sup> General Brett pointed out that in addition to \$104,258,995 cash required to liquidate the then-requested contract authorization, there would also be an unsatisfied obligation of \$598,025,000 of 1941 contract obligations which would have to be provided in a subsequent bill.

While hearings were being conducted on this measure, the Germans overran the Balkan Peninsula, and on 23 May an additional \$2,790,890,785 was requested for Air Corps expansion. Of this amount \$2,500,868,000 was for the Air Corps and the remainder for Signal Corps and Ordnance items.<sup>147</sup> These funds were to construct 12,856 planes which were to complete the present program for all construction.<sup>148</sup> In reporting the bill on 5 June 1941 Representative Snyder explained that the additional \$2,790,890,785 was for further airplane augmentation, looking toward the "ultimate provision of a force of around 50,000 airplanes, Army and Navy," and this appropriation would gear production facilities to the point where 50,000 planes could be maintained in operation.<sup>149</sup>

General Brett stressed to the Senate Committee on Appropriations the necessity of these funds for the maintenance of production after the spring of 1942.<sup>150</sup> The Acting Chief of the Air Corps was proud of the fact that practically all of the 1941 funds had been obligated and that "we are getting the production."<sup>151</sup> Knudsen testified that this 12,000-plane program would provide for the "residue" of the necessary four-motor bombers and would "round off" the program so that no more appropriations for planes would be needed and there would be "enough planes in process."<sup>152</sup> With inconsequential changes, the bill became law on 30 June 1941.<sup>153</sup>

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The amount to be paid is, as finally agreed, provided for over 1,000,000,000 lire by liquidation of prior claims to 10,207,043,000 lire. The balance will be paid in equal to 5,124,874,000 lire each for 100 billion, while 101,203,665 lire are retained as arbitration.<sup>104</sup> The total Air Force contribution is 10,208,665 lire and 1,301,171,127 lire for previous debt claims. The amount of 101,203,665 lire is due to arbitration. This sum has been fully provided to provide the 60,000 lire limit of the right of 100 lire.

The provisions of article 10 of Law 10/70<sup>105</sup> relating to limits on the number of aircraft procurements in the 1st and 2nd period on which the 3rd period above is restricted to the 1st and 2nd period. Similar legislation will be enacted, so that a communication between the 2 periods will be rendered without reference to the limitation of section 1 of public Law No. 13 of April 1963.<sup>106</sup>

A bill (No. 117) to extend the provisions of article No. 704 (10) of Law 10/70<sup>107</sup> to the 1st and 2nd period was introduced in the Senate on 23 April 1971, and it previously received a report from the Ministry of Civil Aviation.<sup>108</sup> The Civil Aviation Division of the Air Corps issued a circular instruction of 10 June 1971<sup>109</sup> authorizing the "procurement in excess of the maximum of the existing authorization, with "exception in the interest of national security," and an instruction to forward the order. This is likely to be a mistake, since the law did not set until 11 July.<sup>110</sup> The instruction will however be provided to the Ministry of Civil Aviation on 10/71, so that it is not reported to be in force until 11 July 1971.<sup>111</sup> The date track out 11 years limit of the right to exceed the 100 lire limit in section 10, which provided a 100 lire limit of the 1st and 2nd period for naval six

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months after the war unless terminated earlier by concurrent resolution or presidential proclamation. If this intended form the bill became public Law No. 880<sup>161</sup> on 5 June 1942. The Air Corps was, then, authorized to procure and operate all the aircraft which were deemed necessary to prosecute the war and for which funds could be secured--and there was no difficulty on that account.

The House Appropriations Committee had learned, when it reported the regular 1942 Bill, that the over \$1 billion dollars provided would not be sufficient for the year. Before the end of July 1941 another 7,000,000,000 measure had been presented to the House.<sup>162</sup> Of this sum only \$204,007,000 was for the Air Corps and only \$728,000 was for the procurement of new aircraft. The remainder was for organizational equipment for the extension of the first to the second aviation objective. These sums were, ratified on 25 August.<sup>163</sup>

This was the last appropriation act passed before the entry of the United States into the war. Congress had made available, in the first eight months of 1941, \$1,156,203,117, the major portion of which was to be used for the procurement of approximately 15,000 planes and the creation of additional productive capacity. Within the three years before Pearl Harbor, Congress had authorized the Air Corps to extend spending to \$1.8 billion dollars and to procure approximately 37,000 planes.

Increasing costs, expansion of military structures, and the modification of aircraft in light of lessons learned from the European conflict made additional appropriation necessary before Pearl Harbor. In the third supplemental national defense appropriation for 1942, the Air Corps received \$724,004,000 to be used as follows: \$31,763,030 to sail to  
or other part of the A.O.S., see below, Chap. III.

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the 3,000-booster and the 12,000-plane programs; \$103,840,074 to increase the procurement of spare parts from 12-1/2 to 20 per cent; and the remainder for expenses incidental to the second (U.S.-gross) aviation objective.<sup>164</sup>

The \$61,783,035 war rate necessary by the increased cost of labor and materials as well as the uncertainties of the costs of new items such as pressure-cabin boosters, supercharger equipment, centralized fire control, bombardiers, and automatic flight controls. The new purchase of aircraft should have allowed a decrease in costs, but this factor had been offset by 10 to 20 per cent increase in labor rates in the aircraft industry, the spiraling costs of materials, the increase in weight of the aircraft, and the necessary modifications.<sup>165</sup> The justification of the item for an increase in spare parts was based on "our own and British experience in operating large numbers of airplanes not in combat, but during an emergency."<sup>166</sup>

Before the Senate committee held hearings and reported these estimates the effectiveness of the airplane had been again demonstrated at Pearl Harbor and in the sinking of the Arizona and the USS West Virginia. Supplemental estimates were submitted by the Army and Navy and were allowed by the Senate committee.<sup>167</sup> The committee felt that not enough funds were allocated to increase the Air Corps from the first to the second aviation objective, so an additional increase was voted for incident expenses.<sup>168</sup> This new sum was rejected by the conference committee, and the final measure provided \$770,000,000 to be expended as originally requested.<sup>169</sup>

Within a very few days, in December 1941, the United States learned some very bitter lessons about aerial warfare. Not only was the powerful

\* For lend-lease provisions of this act, see below, Chap. V.

destructive capacity of the airplane again revealed but the inability of the Army Air Corps to provide adequate J. Pens---to say nothing of furnishing an air offense--was placed in bold relief. The importance of all that had been done to increase production and augment the military forces became quickly apparent.

But what had been done was not enough. On 6 January 1942 the President emphasized to Congress that production must be "raised far above its present levels," and he stated that he had just sent instructions to the various departments and agencies setting new goals. The new aircraft program called for an increase in production so that 60,000 planes would be constructed in 1942, and 45,000 of these were to be combat types. The 1943 goal called for 120,000 planes, 100,000 to be of the combat type.  
<sup>170</sup>

On 16 January 1942 the President submitted estimates totaling \$12,-  
525,572,474 for the new Air Corps program. This was the largest single amount ever provided for the equipment of the military forces, and it was entirely for one branch of the service. Of this, \$9,041,373,000 was requested directly for the Air Corps; \$932,000,000 for the Office of the Secretary of War for expedition, production; and \$60,242,180, \$1,847,948,-  
529 and \$23,308,177 were requested for the Signal Corps, Ordnance Department, and Chemical Warfare Service, respectively. All of these funds were for Air Corps projects\* and were to remain available until the end of the  
<sup>171</sup>  
fiscal year 1943.

General Arnold stressed to the House Committee on Appropriations that the invaders had "the jump on us by having selected their own time for war and their own objectives for attack." Maximum production under the existing

\* For lend-lease aid, see below, Chap. V.

progress would not be attained until August, and further orders were necessary to maintain that peak. The entire amount requested for the Air Corps was to be expended as follows: 7,141,056,310 for complete planes, 170, 421,240 for spare engines, and 1,500,395,510 for spare parts.<sup>172</sup> With the exception of the heavy bombers, however, these funds would not meet the President's program; rather, they would only maintain the current rate of production. Plans to meet the President's goal were in progress of formulation, and the costs of aircraft were still advancing;<sup>173</sup> but it was thought that 23,000 tactical and 10,000 training planes could be obtained with these funds.<sup>174</sup> A bill was reported on 23 January 1942 exactly as had been requested with the single exception of the addition of \$30,000,000 for the construction of the Douglas Dam (in the Tennessee Valley system) to provide additional power for aluminum production.<sup>175</sup>

Practically no opposition was expressed in the House; the Senate committee added \$300,000 for the State Department, and the bill received final approval on 30 January 1942.<sup>176</sup> Within two months after the outbreak of war the Air Corps had been given a greater sum for airplanes alone than it had received for all purposes during its entire previous existence.

Hearings were begun on 11 February on the estimates for another increment of the President's new program. Approximately \$30,000,000,000 was requested, but only \$167,460,000 was for the Air Corps. The House committee expressed surprise that there was even this additional request but readily granted it.<sup>177</sup> Of the Air Corps request, \$160,051,392 was for materiel: \$44,500,000 for gliders and the balance for "equipment procured for other services and expenses incident to procurement."<sup>178</sup> No contention

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developed over the Air Corps item, and it was made available on 5 March 1942.<sup>179</sup> The attitude which Congress assumed toward the problems and requirements of the military establishment seems to have been well expressed by Senator K.D. Mockler (Conn.), acting chairman of the Senate appropriations committee, when he said:

We are willing to cut down on nondesign appropriations, and we expect to do so, but so far as the military, naval and Air Corps expenditures are concerned our committee feels that we must follow the recommendations of those in charge of our Army, Navy, and Air Forces.

It was indicated in the hearings on the fourth supplemental appropriation bill that the more than nine billion dollars would not accomplish any of the President's raw production objectives except in regard to heavy bombers. In order to get other phases of the aircraft production program under way, new Air Corps estimates for \$315,331,251 were submitted as a part of the \$17,579,371,250 requested for the military establishment in the sixth supplemental appropriation for 1942.<sup>180</sup> This sum was to provide for the purchase of 31,070 additional airplanes and related equipment and was to permit production of aircraft and parts at full manufacturing capacity of existing facilities.<sup>181</sup>

Gen. Gen. D.C. Shultz, chief of the material activities of Wright Field, noted that there had been some delay in aircraft production because of materials diverted to other uses, and although he had done everything possible, it was only natural that materials for combat planes received the A-1-A rating. Many other projects had the rating, and General Shultz expressed the desire that the Joint Chiefs of Staff "lay down priorities based on military necessity as they see it."<sup>182</sup> General Shultz also pointed out that after 7 December 1941 aircraft and "certain other"

manufacturers weaker bed production and gave little if any credit for the difficulties faced. In January and April 1942, however, material difficulties had developed.<sup>104</sup>

The House committee recommended the granting of the Air Corps appropriation as requested; the Senate committee added almost one billion dollars, but none of the changes affected the Air Corps.<sup>105</sup> The Senate amended the bill in 80 places, and the largest conference committee in congressional history worked out an agreement. On 20 April 1942 the Air Corps was available for expansion purposes an additional \$2,616,231,251.<sup>106</sup> The act provided \$1,256,211,041 for the procurement of new aircraft and necessary equipment, \$77,163,271 for new engines, and \$1,017,867,501 for spare parts.<sup>107</sup> As noted above, there failure to provide an additional \$1,070 planes. The total Air Corps appropriations for fiscal year 1942 had reached the astounding sum of \$21,932,516,31.

Workings on the military establishment procurement bill for 1943 were not begun until 11 June 1942. At this time the Japanese advances had rendered almost by the very coast of Australia, the Soviets were making calamitous defeats, sinking of allied shipping and ravaged all but inhabitable properties, and it was said that the African continent might be virtually sealed to Allied activity. It was for these reasons that the War Department called for a limitation "not critical" the United States had never encountered. The estimates submitted had called for \$1,-300,000,000, but the Bureau of the Budget had reduced these to \$20,000,000,-<sup>108</sup> \$0, or which some \$16,700,000 were for land-leases.

The Air Corps bill amounted to \$11,616,500,010, the major portion of which was to purchase 24,000 planes, spares, and related to complete

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the Army's portion (148,000) of the 185,000-plane production for 1942 and 189 1943. Experience had definitely indicated that expenditures for spare parts had been far too low, and a study by the Joint Aircraft Committee 190 resulted in the raising of the percentage of spare parts required for efficient operation. That item, including maintenance, called for \$7,282,- 513,284, while the new aircraft would be procured for \$2,945,596,712 and \$702,283,995 was necessary to meet previous contract obligations. Of the "new aircraft" funds, 191 \$126,440,000 was for the procurement of gliders. The Air Corps felt that the unit cost of aircraft would decrease in the next few months and pointed out that since 1 January 1942 renegotiation of contracts had resulted in a saving of \$243,000,000. This indicated either that the initial estimates had been too high or that savings had 192 become possible. The House committee added \$273,628,910 to the Air Corps estimates, which amendment was accepted by the Senate before the measure became law on 2 July 1942.<sup>193</sup> The Air Corps thus had more than 11 billion additional dollars, and once again Congress had acted expeditiously in providing for the fulfilment of the President's request for greatly increased production. In less than seven months after the formal entry of the United States into war, Congress had provided \$29,820,573,261 for the Air Corps and had sanctioned the procurement of 87,620 additional planes.

The Air Corps needed no additional funds for fiscal year 1943, but the production goal was pushed upward to 150,000 for fiscal year 1944 estimates. In the 1944 estimates the Budget and Fiscal Office of the DAF submitted \$10,617,912,200 as the required amount of "standard airplanes--complete." This was to procure 70,900 combat aircraft and 11,100 training planes.<sup>194</sup> Approximately 10,000 of the 12,500 monthly production of

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planes to be attained by the end of December 1943 were for the AF, and the 1944 funds were to maintain that production rate until the end of the calendar year 1944.

Before the above estimates were submitted to Congress, several changes were made. The total amount requested was \$20,655,431,000 and was to provide approximately 100,000 planes, including 36,000 bombers, 38,000 fighters, 12,000 transports, and 9,000 trainers.<sup>185</sup> For these planes, plus spare engines, spare parts, and incidental procurement expenses, the Air Corps expected to obligate during fiscal year 1944 the sum of \$20,573,128,831.<sup>186</sup> Since this covered the program through 30 June 1945, much of the appropriation was to spread over two years.<sup>187</sup> The number of planes alone was only one of the vital factors to be considered in thinking of unit prices; another, and more significant, was the size or poundage of the airframe. In the calendar year 1943 the expected production of airframe poundage was 911,000,000; for 1944 it was to be increased to 1,417,000,000, which was approximately five times the production of 1942.<sup>188</sup>

This budget was termed the "decisive" one, and General Arnold emphasized the shift toward more combat aircraft. Until 1941 the Air Corps had procured approximately 60 per cent trainers and 40 per cent combat types. Then the ratio dropped to 50-50; the 1944 budget sought funds for only 9,000 trainers out of a total of 90,740 planes, or less than 10 per cent.<sup>189</sup> This important cut was to be a leveling off in training activities and that trainer school was fairly well stocked by the middle of 1942. Neither the Army nor the Corps made any changes in the Air Corps rates of incorporation, and the funds (\$20,655,431,000) became available on 1 July 1943.<sup>200</sup> This brought to \$20,169,070,242 the Air

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Corps appropriations for the fiscal years 1940-44, inclusive, had raised the number of planes authorized for procurement to 224,000.

By June 1941, when the material requirements of the AAF again came under the consideration of Congress, the program of expansion had virtually been completed, and the peak of production had been reached.<sup>201</sup> The military established a appropriation bill for 1945<sup>202</sup> carried an appropriation for the AAF of only \$1,010,200,000 in new funds; to this was to be added a reappropriation of \$11,000,000,000 to meet the AAF requirement of \$12,010,200,000.<sup>203</sup> The AAF had originally requested \$2,371,132,-000 of new funds; but the Bureau of the Budget reduced this amount by \$760,022,800, leaving \$1,010,200,000 as carried in the bill. The carry-over of approximately \$11,000,000,000 resulted partly from reductions in requirements, but mainly from savings resulting from reductions in the prices of airplanes.<sup>204</sup> The fact that the rate of attrition of airplanes was nothing like as great as had been anticipated made possible a considerable reduction in the number of planes required; but the saving thus effected was partially offset by the cost of building more expensive aircraft more in demand. The average weight per airplane or airplane produced during the first half of fiscal year 1940 was 3,500 pounds, whereas the average weight of aircraft on the schedule 1 for production during the second half of fiscal year 1940 was found to be 14,800 pounds, an increase of three tons. Though there was to be a reduction in the number of airplanes produced, the weight was to be increased by 30 per cent.<sup>205</sup>

The most important factor in the \$11,000,000,000 saving was the reduction in prices of airplanes, mainly caused by increased production, with

r sultant increase of efficiency and a more exact knowledge of the actual cost of production. For example, the cost of the B-17 was reduced 34 per cent; that of the B-24, 32 per cent; that of the B-26, 26 per cent; that of the B-52, 17 per cent; and that of the B-17, about 10 per cent.<sup>206</sup> A partial explanation of these reductions is to be found in the fact that the B-24, originally estimated on the basis of 50,000 man-hours per airplane, was later produced at approximately 20,000 man-hours.<sup>207</sup>

Of the \$12,610,774,500 required for the fiscal year 1945, \$8,949,-  
535,025 was allotted for the procurement of aircraft, including spare  
engines and spare parts.<sup>208</sup> This amount would have been much larger but  
for the fact that, in order to obtain maximum production of the very heavy  
bombers, a sufficient number had already been ordered to provide production  
until December 1945; hence the 1945 appropriation covered only the number  
to be produced during the first six months of 1946.<sup>209</sup>

Like most appropriation bills, the military establishment appropriation bill for 1945 had a somewhat stormy history in the Congress, but the differences of opinion between the Senate and the House did not affect the AF appropriation; and the amount approved by the Bureau of the Budget amounting to \$1,610,200,000 in new money was included in H. R. 4937 when it became Public Law No. 374 on 28 June 1944. In addition to the approximate \$12,610,200,000 directly allocated to the AF for fiscal year 1945, something more than \$8,000,000,000 carried under other heads (Chemical  
Service Corps, Ordnance Department, and Signal Corps, chiefly) was for  
the AF; thus the AF was to benefit to the extent of more than \$20,000,-  
000,000--more than 40 per cent of the \$49,550,000,000 total.<sup>210</sup>

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A token appropriation of \$100 for the AAF was included in the military establishment appropriation bill for 1940,<sup>211</sup> which became Public Law No. 120 on 2 July 1940. The original estimates for fiscal year 1940 had called for expenditures of 17.7 billions dollars; but as soon as the end of the war in Europe seemed imminent the estimates for 1940 were completely revised, and the requirements were lowered from 17.4 billions to 5.9 billions. The great part of this reduction was made possible by lowering the number of planes called for. Early in April the number to be procured was lowered by 27,118, and another cut of 16,674 brought the total reduction to 46,792.<sup>212</sup> In some items, where it became necessary to reorganize old units to new types--such as B-17 or L-24 units to B-29--requirements were increased; but, in general, substantial reductions were made in all components of the air force. The AAF program for fiscal year 1941, as it was finally presented to Congress, called for expenditures of \$5,770,796,785.<sup>213</sup> Funds from previous appropriation were available to finance this program, and there would be an additional six and one-half million dollars to be applied to other 1940 War Department requirements.<sup>214</sup> The amount to be spent for airplanes, spare engines, and spare parts, in fiscal year 1940 was only \$2,228,802,500, of which amount \$10,500,000 was for gliders.<sup>215</sup> By the end of fiscal year 1940 these totals had increased to \$2,059,270,342 and 271,730 planes. (See table on following page.)

The oft-repeated immunity that Congress was responsible for the inadequacy of American air power because of its unwillingness to appropriate the necessary funds is about as far from the truth as any statement can be. From 1930--when the 1,800-plane program was authorized--up to 1939, Congress allowed slightly more than was requested in the estimates received

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| Date         | Total Cash     | Contractual Authority | For Advances,<br>Charges, and<br>Star-<br>bits | Plus to<br>be recovered | Per cent.   |
|--------------|----------------|-----------------------|--|-------------------------|-------------|
| 11 June 1948 | 70,142,472     | 19,112,000            | 1,251,000                                      | 172                     | 3,549,000   |
| 20 Apr. 1949 | 50,187,351     | 12,205,948            | 27,944,002                                     | 721                     | 5,653,220   |
| 1 July 1949  | 50,173,751     | 12,239,000            | 260,024,002                                    | 2,176                   | 5,653,220   |
| 18 June 1949 | 265,082,116    | 103,360,500           | 133,711,804                                    | 1,036                   | 1,755,000   |
| 23 Jun. 1949 | 288,360,267    | 105,255,537           | 155,153,673                                    | 1,151                   | 1,755,000   |
| 9 July 1949  | 350,032,304    | 1,002,000,000         | 1,257,113,116                                  | 1,256                   | 1,256,000   |
| 8 Oct. 1949  | 109,935,977    | 40,051,756            | 120,500,000                                    | 1,220                   | 1,220,000   |
| 2 Sept. 1949 | 639,116,639    | 32,025,000            | 1,625,111,250                                  | 1,626                   | 4,750,000   |
| 20 July 1949 | 4,217,755,532  | 16,755,000            | 2,957,955,675                                  | 1,156                   | 6,010,520   |
| 26 Aug. 1949 | 207,097,820    | 30,000,000            | 728,300  | 728                     | 54,105,700  |
| 17 Dec. 1949 | 779,000,000    | 9,011,572,000         | 9,676,412,104                                  | 9,676                   | 5,653,000   |
| 23 Dec. 1949 | 1,962          | 107,430,000           | 9,041,572,000                                  | 9,041,572,000           | 5,653,000   |
| 27 Dec. 1949 | 1,962          | 8,514,861,251         | 105,961,000                                    | 1,059                   | 5,653,000   |
| 28 Dec. 1949 | 1,962          | 8,514,861,251         | 8,686,746,610                                  | 8,686,746,610           | 5,653,000   |
| 2 July 1950  | 21,516,890,110 | 20,000,000            | 21,516,890,110                                 | 21,516,890,110          | 112,373,000 |
| 1 July 1950  | 20,000,000     | 181,000               | 181,000  | 181,000                 | 19,351,235  |
| 23 June 1950 | 1,109,260,630  | 160                   | 1,109,260,630                                  | 1,109,260,630           | 70,000,000  |
| 5 July 1950  | 1,109,260,630  | 160                   | 1,109,260,630                                  | 1,109,260,630           | 112,225,471 |

- For creditable delivery, are included in total.  
3,000,000 per program.  
To these no funds, add a reappropriation of 11,000,000,000, making the total for FY 1945, \$12,610,600,-  
plus 90,000 for sliders.  
Amount proposed in my bill; however, it appears that 1,82,000,000 was actually spent (House, February  
on the military establish't, at present' establisht, or carryover of more than \$12,600,000 made it possible for me to  
program for 1945. (See text, p. 44.)  
plus \$1,600,000 for procurement of sliders.

$\tau = 62$ ,  $N_{\text{sites}} = 11$

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- (1) A mobile phone of rate  $r$  is sold at a shop. It costs  $\$3$  and  $\$0.01$  per minute. If it costs  $\$7$  (does not include  $\$3$ ), find  $r$ .
  - (2) Find the minimum value of  $x^2 + 2x + 3$ , where  $x$  is a real number.
  - (3) The graph of a polynomial function  $f(x)$  is shown below. State the possible maximum and minimum values of  $f(x)$ .
  - (4) In triangle  $PQR$ ,  $\angle Q = 60^\circ$ . If  $f(x) = \sin x$ , find  $\sin P$ .
  - (5) Let  $p = \frac{1}{2}x^2 - 10x + 10$  and  $q = x^2 - 4x + 10$ . If  $p > q$ , find the range of  $x$ .

## INTERVIEW

- (6) On 7 November 1943 the number of aircraft on hand in the AF was 40,000 and on 6 May 1944 amounted to 75,413.
- (7) On 1 April 1944 the AF had 10,102 first-line combat aircraft.
- (8) On 1 May 1944 the 10,000th B-24 was delivered.
- (9) Between 1 July 1940 and 6 December 1944 more than 175,000 airplanes were produced in the United States, of which 1,023 were very heavy bombers, 26,155 heavy bombers, 30,040 other bombers, 76,021 fighters, 3,262 other combat types, and 18,817 transports. Of this total 127,724 were for the Army.
- (10) The 200,000th airplane produced with U.S. finances after 1 July 1940 was delivered on 31 May 1944, a year and three days after the 100,000th had been delivered. Thus it took 30 months to produce the first 100,000; whereas the second 100,000 planes were turned out in but little more than a year.
- (11) Of the 75,413 airplanes on hand in May 1944, 33,066 were combat planes. In September 1944 the number of combat planes had risen to 40,132.
- (12) The 70,000th one-engine fighter produced in the United States after 1 July 1940 was delivered on 1 March 1944. Of this total, 49,783 were Army type.
- (13) Production of the B-29 began in September 1943; during the remainder of 1943, 77 B-29's were produced, the rate of production rising from 5 in September to 44 in December. In the first half of 1944 production went from 52 in January to a total of 83 in May; the total for the six months was 363. During the second half of the year approximately 820 B-29's were delivered, giving a total for 1944 about 1,200. In the first half of 1945 peak production was reached in June; the figure for the month is 362. The total for the six months is a little over 1,200. The figures for the totals in five months show graphically how dramatic is the climb from the last of '43 to '45. In July, 33 B-29's were produced; in August, 314; in September, 141; in October, 3; and in November, 6.

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## Chapter II

### METHODS FOR EDUCATIONAL ORDERS AND EXPEDITING DOWNSIZING

The American aircraft industry, as well as industrial concerns which manufactured items other than aircraft, and those who made parts, was not in a favorable position, in 1938, to meet the demands of the expansion programs. It was necessary, therefore, to adopt some means of familiarizing manufacturers with the new types of articles which they might be requested to produce in case of a national emergency. To acquaint manufacturers with the new problems, to start production among war firms, and to increase the total productive capacity, the War Department adopted three methods: (1) educational orders, (2) the increase of existing facilities by government financing, and (3) the building of government-owned plants to be operated by private industry. The effects of these measures were far-reaching in assisting industry toward attaining the goals of the War Department. Funds for these purposes were provided for "educational orders" and "expediting production," in war programs to prepare for production; and later to speed production.

#### Educational orders

Educational orders had been authorized by Public Law No. 189 of 1<sup>st</sup> June 1936.<sup>1</sup> This measure authorized the Secretary of War to issue orders for munitions or war material and/or technical designs (nuclear racial in character) "and essential accessories and parts thereof needed in the military service, with commercial concerns to familiarize commercial and manufacturing establishments with the manufacture of such munitions and

such accessories and parts." The Secretary of War was to solicit bid, only from those firms which he deemed competent to produce those items in time of war and was to have the approval of the President before contracts were entered into. First order placed with any concern should include gauges and other appliances which would be basic in the creation of new capacities. Each firm was limited to one order for the same article of munitions within a three-year period, and an appropriation of \$2,000,000 was authorized for each of the five fiscal years beginning with the fiscal year of enactment of the law.<sup>2</sup>

The editor of Army Ordnance described this law as "one of the most far-reaching enactments of the Congress of the United States,"<sup>3</sup> and Congress appropriated \$2,000,000 for the use of the Secretary of War during fiscal year 1939.<sup>4</sup> The executive program was in view on 3 January 1939 when Representative J. J. Smith (Conn.) introduced H.R. 1004 which proposed increasing the appropriation for educational orders to \$5,000,000 for Fiscal year 1939 and retaining at \$2,000,000 the funds available for this purpose during the succeeding four fiscal years.<sup>5</sup> A similar bill (S. 343) was introduced by Senator Morris Sheppard (Texas) on 19 January. This measure allowed \$32,500,000 for the educational orders program which would also include the procurement of production studies, factory plans, and other production data.<sup>6</sup>

The Chief of the Materiel Division had "no objection" to increasing the fiscal year 1939 appropriation to \$5,000,000 and recommended that a favorable report be made on H.R. 1004.<sup>7</sup> On 1 February 1939 the Plans Section of the CSCC recommended that the War Department support the House bill.<sup>8</sup> The letter of the Secretary of War to the chairman of the Senate

military officials to issue "a full instruction on the expected use of the funds provided for in the act," which had been incorporated in section 1c of H.R. 3513 and later in H.R. 2701. The instruction, in the rest of section 1c, "Every such an order" the chairman of the Select Committee on the Conduct of the War to "issue orders" for \$2,000,000 to be authorized would enable the Accounting Secretary of War to place orders with the chairman of the Select Committee for the manufacture or to requisition it "of special munitions, all nonexplosive in character." It is recommended that the \$2,000,000 be authorized for fiscal years 1940 and 1941.<sup>9</sup> The inclusion of the authority for procurement of protection facilities, factory or otherwise, and other protection facilities was apparently favored. This would be the only way that the government could have a creditable record of its results obtained, on the two sides and on both sides, by "utilizing directives in the future manufacture of such items on a non-explosive basis."<sup>10</sup>

In the final day of hearings before the committee, the chair introduced material passed to him by "one of the top officers" and which Senator William C. Johnson (Colo.) wished to present as an exhibit. In this communication, a officer pointed out that in non-war situations, one disadvantageous, but also lucrative (or "kickback"), act<sup>11</sup> had caused difficulty in the administration of the program during the current year. The specific trouble was, in the problem of determining whether an additional order should be considered as a contract for a military item. In such cases, several options had been made at an early stage in the result that the Attorney General had ruled out the projects or articles because public sale, since they were passed to the government. If a certain number were

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not made, the Walsh-Healey Act applied. Also, the educational order was not the same as a contract for quantity procurement of supplies. The idea was to place an order with some manufacturer who did not produce a certain article in quantity so that he became a potential supplier of that item during war. The proposed solution lay in the amendment of the bill to provide that educational orders would not be considered as contracts for public work or works.<sup>12</sup>

This amendment was accepted by the Senate committee, but otherwise it left the measure as passed by the House -- authorizing the procurement of production studies, factory plans, and other production data, as well as the storage and rationing of all articles produced and the equipment used in their manufacture. The committee emphasized that educational orders could never reduce the time lag in reaching mass production for war. The best estimate, it thought, was a saving of five years from the beginning of an emergency until our factories could reach mass production.<sup>13</sup>

The amendment was rejected by the Senate, but on 1 April 1930 the sum of \$34,000,000 was authorized for the fiscal year, 1930, and 1931 and \$2,000,000 for each of the succeeding four fiscal years.<sup>14</sup> The educational orders program thus became a seven-year project instead of five, but was to be concentrated in the years 1930 and 1931. The regular war appropriation act for 1930 was approved on 20 April 1930 and provided \$2,000,000 for these fiscal orders.<sup>15</sup> The War Department requested \$2,000,000 for 1930 and 1931 in the supplementary appropriation bill, but the Senate committee reduced this to \$1,200,000, and that was the amount appropriated for the single year of 1930.<sup>16</sup>

The total amount--16,200,000--of the authorization of \$1,000,000 was requested for fiscal year 1941. Col. W. A. Rutherford, director of the Planning Branch, Office of the Assistant Secretary of War, in defending this request emphasized fully the importance of this program. He emphasized that with the single exception of armament material, "no munitions industry at such exists in the United States." The potential capacity was greater than that of any other nation, but about two years would be necessary to convert appropriations for munitions in quantity into the delivered munitions themselves. The reduction of this time factor by all practicable means he considered the main objective of industrial war planning, and he expressed the hope that in another national emergency there could be coordinated industrial and economic effort on the part of this country. "In happy contrast to our experience during the First World War,"<sup>17</sup> the value of such orders was indicated by the fact that experience had proved that a saving of from four to 12 months could be achieved, depending on the complexity of the item.<sup>18</sup> The funds were appropriated on 16 June 1940.<sup>19</sup>

Only a small portion of the earlier educational orders funds was expended for Air Corps items. This circumstance was caused by the relatively favorable condition of the industry producing materiel for that arm and by the fact that of the 50-odd critical items under consideration in early 1940, only one, propeller hubs, was for the Air Corps for fiscal year 1941.<sup>20</sup> In early 1939, however, the Air Corps' "proposed educational order program" for fiscal year 1940 called for a total expenditure of \$8,500,000 and included the following items: basic trainer; supercharger; bombsight, aircraft master; automatic pilot; photo lens; outer wing panel, center wing section, and fuselage of four-engine bombers; navigation watches, flight indicator,

and turn inductor.<sup>21</sup> The Office of the Assistant Secretary of War disapproved the proposed program, so the Materiel Division was requested to submit a list of three-star priority items which would bring the total back to \$6,500,000.<sup>22</sup>

The Air Corps was obviously working on the assumption that the total authorized amount of \$6,500,000 would be granted for 1940 and 1941 by the appropriations committee. When only \$11,250,000 was made available, Colonel Rutherford requested the Air Corps to reduce its program to approximately \$3,750,000, its tentative quota.<sup>23</sup> In fact, As yet the Assistant Secretary of War was still holding in abeyance the approval of the expenditure of \$3,750,000 by the Air Corps. Some of the items had not been disapproved, but informal conversation had indicated that the items proposed would for the most part involve the increase of existing facilities rather than the creation of entirely new productive capacities, and further consideration was thought unwise.<sup>24</sup>

Meanwhile, General Arnold expressed the conviction that the importance of educational orders in the development of maximum production of airplanes in an emergency could not be overemphasized. While the expansion program and foreign and domestic orders would necessitate a greater trend toward quantity production methods, the Chief of the Air Corps did not believe that the conclusion of the program would have "insured the development of the present industry to the extent necessary to meet our anticipated war-time requirements."<sup>25</sup> He believed it necessary to develop other facilities and to that end proposed the use of \$850,000 to educate a corporation (such as General Motors) to build a simple plane, preferably of the basic trainer type, on a mass production basis. If the training types could be built

outside the aircraft industry, the airplane factories would be free to devote all of their facilities to combat types after A-day.<sup>26</sup>

The Chief of the Air Corps on 20 October 1939 again justified a program of 25 three-star military priority items, but the Assistant Secretary of War rejected it. The apparent cause for rejection was the fact that the aircraft industry had on hand or in prospect orders totaling 600,000,000 while the rest of the munitions industry had practically no current business. The Ordnance Department contended that the 3,750,000 would have very little effect over and above the 600,000,000 business of the aircraft factories, but if added to the 10,250,000 earmarked for Ordnance orders, the effect would be considerable. The position of the Ordnance Department was thought to be logical and not reasonably open to dispute by the Air Corps. However, it was urged that 1500,000 of the 3,750,000 be reserved for obligation by the air arm.<sup>27</sup>

The only grant which the Air Corps had received (for fiscal year 1940) by December 1939 was \$100,000 for "hub, propeller, split." The Chief of the Air Corps felt that the failure to give grants to his arm had prevented the Air Corps from following to a satisfactory conclusion the planning effort then in progress as a joint project of the Army, Navy, and aircraft industry. The Air Corps was limited to the procurement of plans and production studies--and not the actual article--and thus was brought only to a contemplation of deficiencies of productive capacity and to a conversational consideration of the means ultimately available for their correction. Only in one instance had the Air Corps been able to take corrective action, and the planning effort of that service could not be considered complete until the larger subcontractors had secured training in their wartime tasks.

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either as a result of normal current orders from the aircraft industry or as a result of educational orders from the government. He recommended that \$750,000 be allowed for an educational order on the B-26 wing with selected non-aeronautical facilities. This would bring the program to only \$850,000 for fiscal year 1940.<sup>28</sup>

Apparently the only order allowed the Air Corps for 1940--other than one for propeller hubs--was \$265,000 for bombsights.<sup>29</sup> During the calendar year 1940 no educational order were placed by the Air Corps. On 14 November 1940 the chief of the Materiel Planning Section pointed out that the program was being held "in a state of suspense" because of a lack of funds. The original allowance had been withdrawn because the government felt that foreign orders would result in sufficient education for American industry. The funds had been set aside as an addition to the ordnance program.<sup>30</sup>

The continued demonstrations of the effectiveness of air power soon brought the realization that further steps must be taken to increase the productivity of the aircraft industry and to supply additional facilities. In January of 1941 a committee was established in Detroit to contact the automobile industry on behalf of the government. The proposal was to have the automobile industry build parts to be assembled by aircraft manufacturers in government plants, but a fear developed among some that the "haves"--General Motors, Chrysler, and Ford--were not planning to take full advantage of the existing idle facilities of the "have nots"--Willys-Overland, Hudson, Graham Paige, and other lesser manufacturers.<sup>31</sup>

A little more than two months later the Air Corps submitted a list of proposed educational orders which included the following items: Chrysler Corporation, \$5,336,835; Ford Motor Company, \$3,418,500; Goodyear Aircraft

Corporation, \$1,751,742.93; Delco Products Division of General Motors, \$992,369.81; and Hudson Motor Car Company, \$812,710.83. All orders were to be for parts of the B-24, B-25, and B-26 and totaled \$12,312,187.<sup>32</sup> On 7 April 1941 the President approved the application of \$11,000,000 to this Air Corps program, and the Under Secretary of War requested that the utilization of \$1,312,187 from the funds for expediting production (contained in Public No. 800 of 8 October 1940) be allowed to complete the program.<sup>33</sup> Slightly more than the requested amount was allotted so that the Air Corps had \$12,885,664 for fiscal year 1941.<sup>34</sup> All but \$564,477 of this fund was obligated by 2 June, and it was requested that that sum be withdrawn from the Air Corps apportionment.<sup>35</sup>

### Expediting Production

None of the contracts with the automobile concerns had been completed by 31 December 1941,<sup>36</sup> at which time the Air Corps had utilized less than \$15,000,000. By that date the United States was at war, but the wisdom of the program was to be shown in the amount of production of aircraft materials. Funds for "expediting production" replaced allotments for educational orders. These funds were utilized for two purposes: the increase of existing facilities and the creation of new facilities for aircraft production, and the payment of additional sums to get earlier delivery.

These two phases of expediting production cannot be separated, as one encompasses the other. The educational orders program was primarily to prepare for production; this expediting program was to get out the production. The educational orders appropriations had been sufficient

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for fiscal year 1940, and the appropriation bill for 1941 carried a much larger sum for that particular project. The events in Europe in the spring of 1940 made it imperative that the delivery of aircraft be speeded up and that new facilities be created.

When the Germans were swooping toward the Atlantic, General Arnold emphasized the necessity of taking steps to assure increased aircraft production.<sup>37</sup> At that time the floor space of the aircraft industry was approximately 11,000,000 square feet and the production rate approximately 350 planes per month.<sup>38</sup> Some congressmen had become concerned at the "lackadaisical attitude of the Air Corps in not requesting much more money for a speed-up of the present program," and it was suggested that this could be accomplished by providing funds to pay the manufacturer for a temporary increase in his force or by holding out the incentive of additional contracts when the current ones were fulfilled.<sup>39</sup>

On 16 May 1940 the President called for the production of 50,000 planes and the problem of facilities became acute. It was estimated that this program would require 24,000,000 additional square feet of floor space or a total of 35,000,000. About 4,000,000 could be gained by conversion; the other requirement would have to be met by new facilities.<sup>40</sup> The cost of these facilities and necessary funds for accelerating deliveries were estimated at \$120,000,000. Before the Air Corps had decided upon the most feasible means of accomplishing this program, the author John J. Flynn stressed the fact that "orders to the billions of dollars" were waiting for the airplane factories which did not have the space to handle them. He pointed out that private industry would be hesitant to undertake this expansion because of the possible disastrous effects at

the end of the war. The government would have to finance them and "take up its mind to face the losses if the loan is never made good." This plan would have the double advantage of making possible a limitation of profits and avoiding postwar catastrophe in the aviation industry.<sup>41</sup>

The Chief of the Air Corps indicated three possible methods of expanding facilities for the production of aircraft and engines: (1) government-owned, government-operated facilities, (2) privately owned and privately operated facilities, and (3) government-owned and privately operated facilities. Advantages and disadvantages could be found in each method, but the most logical seemed to be government ownership with private operation for the new facilities and government assistance to private industry in the increase of existing facilities.<sup>42</sup> While this problem was being discussed, Congress had provided funds for the construction of 4,247 additional planes and had granted \$525,000,000 for expediting production for military defense. Of this sum approximately \$184,500,000 was for the Air Corps.<sup>43</sup>

The third supplemental appropriation for 1941 contained the funds for the first large increment for the achievement of the President's goal of 16 May 1940. The aircraft industry had estimated that slightly more than \$175,000,000 was required to create 15,447,891 additional square feet of floor space, so \$180,000,000 was sought for that project. Also requested was \$120,000,000 to expedite the delivery of the \$608,000,000 worth of orders then outstanding. This sum would care for the increase to two and three shifts and for the necessary overtime. Some controversy developed in Congress over this latter item on the ground that it could constitute a bonus, and rather than adopt that policy, the Department should exercise

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its priority on deliveries; otherwise foreign powers would continue to pay larger bonuses for delivery to them. Congress granted the \$120,000,-  
000 and \$178,000,000 of the requested \$180,000,000.<sup>44</sup> The Air Corps  
anticipated using \$60,000,000 of these funds for the creation of three  
government-owned factories--one for engines, one for heavy bombers, and  
the other for pursuit planes.<sup>45</sup> Within a month it had been decided to  
construct one B-17 plant and one B-25 plant of 1,250,000 and 1,000,000  
square feet, respectively. The construction costs were set at \$11,250,-  
000 (B-17) and \$9,000,000 (B-25).<sup>46</sup> A board of officers made site sur-  
veys, and Knudsen favored Omaha, Nebr., and Tulsa, Okla. On 9 November 1940  
the Chief of the Air Corps instructed the chief of the Materiel Division  
to begin construction at the two sites.<sup>47</sup>

Almost immediately the Acting Secretary of War emphasized that ad-  
ditional bomber capacity was needed<sup>48</sup> and suggested the construction  
of two more factories--essentially assembly plants--which would assemble  
parts manufactured by the automobile industry.<sup>\* 49</sup> Consequently, approval  
was granted for the construction of two more factories, one at Ft. Worth,  
Texas, the other near Kansas City, Mo. All plants were capable of quick  
conversion to four-motor bomber production.<sup>50</sup>

The Acting Secretary of War outlined the cost of new bomber plants  
and the projects necessary to prepare the automobile and other industries  
for assisting in the aircraft program. This program entailed \$75,000,000  
which would be financed by \$39,000,000 from "expediting production" funds,  
\$11,000,000 from "educational orders" funds, and the remainder to be re-  
quested by Congress. The total cost of the bomber project for the first

\* For educational orders to some of these concerns, see above p. 53a.

year would be over one billion dollars and would be apportioned among (1) cash appropriations, (2) contract authorization, and (3) "expediting production" funds.<sup>51</sup>

General Brett stated in the hearings on the fifth supplemental appropriation for 1941 that the four plants had been approved, and the estimated costs were as follows: Omaha, \$13,700,000; Kansas City, \$8,910,000; Tulsa, \$15,000,000; and Ft. Worth, \$15,000,000. The sum of \$36,000,000 had already been allotted, leaving an additional \$16,660,000 necessary to bring the projects to completion.<sup>52</sup> This supplemental appropriation requested \$363,280,000 for construction of new productive capacity, and that amount was allowed the Office of the Secretary of War for "expediting production." Of this amount the Air Corps received \$75,000,- 000 for increased facilities and \$137,361,000 to care for increasing costs.<sup>53</sup> The Assistant Secretary of War stated that there were 39 projects in the Air Corps program and that these would cost \$342,000,000. Approximately one-half of these items was for the expansion of existing facilities; the others were for the construction of new plants.<sup>54</sup>

The program of government-owned and privately operated plants continued to be expanded until the end of 1942 when there were the eight following plants: (1) Omaha, Nebr. (Glenn L. Martin Co.); (2) Kansas City, Kans. (North American Aviation, Inc.); (3) Tulsa, Okla. (Douglas Aircraft Co., Inc.); (4) Ft. Worth, Texas (Consolidated Aircraft Corp.); (5) Oklahoma City, Okla. (Douglas Aircraft Co., Inc.); (6) Marietta, Ga. (Bell Aircraft Corp.); (7) Cleveland, Ohio (Fisher Body Division of General Motors Corp.); and (8) Chicago, Ill. (Douglas Aircraft Co., Inc.).<sup>55</sup> In the intervening appropriation bills, funds were provided for these

additional plants and for other items necessary to hasten aircraft production. This money, as usual, was given to the Secretary of War, who allotted it to the various arms, and the program was carried out after approval by the National Defense Commission and the President. The exact amount given to the Air Corps is not always clear, but sufficient sums were allotted to accomplish the task. In the military establishment appropriation for 1942--which included the very heavy bombers B-29 and B-32--Congress allowed 1,271,800,000 for expediting production. Only approximately 500,000,000 was available for re-expansion because the remainder was necessary to liquidate previous contract obligations.<sup>56</sup> It should be recalled here that the Air Corps was permitted to shift funds from one item of expenditure to another and that the Defense Plants Corporation (a subsidiary of the Reconstruction Finance Corporation) also aided in the financing of additional production facilities.

In the hearings on the third supplemental appropriation bill for 1942 the Under Secretary of War noted that of the approximately 1,900,000,000 granted for this purpose about 1,600,000,000 had been obligated. The Air Corps had expended approximately 200,000,000 of this, and 51,000,000 of the remainder was earmarked for that arm. The new request for 438,000,-000 was granted, but no Air Corps items were involved.<sup>57</sup> This act allowed the expenditure of these funds until 30 June 1943 / presidential approval.

The largest single request for increasing Air Corps facilities came in early 1942 in the so-called "12.5 billion" war airplane program. The sum of 283,000,000 was sought to hasten the achievement of the new objective set by the President in his message of 6 January. Of this amount, 635,000,000 was for facilities (plants, machines, and tools) for the

assembly of airplanes and the production of component parts while \$118,-  
000,000 was to be spent for the production of engines and engine parts.  
The remaining \$130,000,000 was to be expended on Air Corps items by the  
Ordnance Department and the Chemical Warfare Service. The sums were  
<sup>58</sup> quickly granted.

The fifth supplemental appropriation for 1942 granted the Office of  
the Secretary of War the sum of \$3,011,512,000 for expediting production.<sup>59</sup>  
None of this sum was for the Air Corps, though the appropriation of \$107,-  
440,000 for that purpose might be considered in that light since it was to  
facilitate production by caring for certain cost increments.\*

No funds for expediting Air Corps production were provided by the  
appropriation for fiscal year 1943, but some of the previously granted sums  
were available for that purpose. The amount of \$749,087,424 was obligated  
for that purpose in 1942, and an estimated \$53,573,180 was to be obligated  
in 1943.<sup>60</sup>

Of the approximately six and one-quarter billions appropriated between  
20 June 1940 and 15 May 1943 for expediting production for the Army there  
remained as of 1 July 1943 only \$655,147,000 unalocalled. To continue  
this work during the fiscal year of 1944, a reappropriation of this surplus  
was requested and \$749,000,000 in new money. Of this sum \$190,000,000 was  
to be allocated to the Army Air Corps (H.R. 2996). This amount was needed  
largely for "subcontractors and manufacturers of aircraft accessories,"  
expenditures due to "changes in models, specifications, manufacturing pro-  
cesses, and techniques." The committee expressed surprise at the large

\* see above, pp. 57-58.

request for the Office of Secretary of War and reduced the total appropriation for this project by deleting the \$81,969,000 "contingencies" item, holding that each individual project contained amounts for contingency funds. The \$657,011,000 of new funds added to the surplus gave the Army \$1,222,-158,000 for expediting production. The amount allocated to the Army Air Corps remained unchanged. After approval by the House and Senate this bill, on 1 July 1943, became Public Law No. 103.<sup>61</sup>

The effect of this program, as well as other means of facilitating production, was revealed in the number of planes being delivered at the end of 1943. Enormous over-all appropriations were still necessary, however, and the conversion of factories to production of heavier aircraft was still in process. It was originally estimated that 198,000,000 would be necessary for expediting production of aircraft during the fiscal year of 1945.<sup>62</sup>

Upon investigation it was ascertained that a surplus of approximately \$1,100,000,000 remained from the 1943 and 1944 appropriations for Army expediting needs, which amount would be "more than sufficient to meet our anticipated requirements" for the fiscal year of 1945. It was recommended (L.L. 4867) that \$18,400,000 of this amount be reappropriated for the Army for expediting purposes in 1945. The estimate for the Army Air Corps was reduced from the original \$8,000,000 to \$2,500,000, which was to be used "primarily in the enlargement of existing facilities, in order to produce different types of planes and larger planes," and for subcontractors (mostly automobile establishments, where these parts, mainly for large-type planes, were produced). Fifty millions of the fund for the Army Air Corps were to be earmarked for capital expenditures made necessary by

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technical improvements and engineering changes in airplane models and engines; to care for alterations in aircraft built and equipped with expediting production money; and to be used for replacement of obsolete and worn-out machine tools. Seven millions were to be allotted for conversion of plants to care for an excess of production, and a small remainder for miscellaneous contingent expenses. However, it was tacitly agreed that the total of this amount could be considerably increased, even to the extent of 100,000,000, by additional savings elsewhere. After being approved by the House and sent to this bill, containing 100 in new money and 963,393,900 in unallocated funds, became Public Law No. 374 on 28 June 1941.<sup>63</sup>

For the fiscal year 1943 the Army (H.R. 3530) only asked for 100 plus a reservation of 123,701,000 (the total carry-over) for Army expediting requirements. Of this amount 80,922,000 had been allocated to the "Finance Service, Army." After deleting the amount asked for the Finance Service, Army, the final report of the committee requested 100 in new money and 83,779,900 reappropriation. No part of this amount, however, was specifically allocated to the Army Air Corps. Approximately 70,000,000 of the amount would be needed for incomplete projects, leaving the remainder for new projects and scientific and technical work, a sizable portion of which doubtless would be used by the Army Air Corps. After approval by the House and Senate this bill became Public Law No. 126 on 5 July 1943.<sup>64</sup>

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Chapter III

CONTRACTS AND PURCHASES

As long as the United States was at peace and the number of aircraft procured by the Air Corps was small, the method of procurement was not of major significance and the profit allowed producers could be controlled through the awarding of contracts. When the number of planes to be purchased increased rapidly and as the United States moved toward a wartime economy, the speed and rapidity of procurement and the amount of profit became problems of major importance.

At the beginning of the expansion program in 1939 the Air Corps procured all planes--except experimental and research types--through the competitive system. The Secretary of War felt that this method had a "very salutary effect" upon progress in the aviation industry. Competition "brought the inventive genius to a high pitch, and the result was the submission of a better product. In subsequent competitions, each competitor felt that he must surpass the military efficiency of the airplane previously purchased in order to be considered for award. This constant striving demonstrated the soundness of a competitive bidding, and the Secretary forecast, in the very near future, the Army Air Corps "fully armed with the most modern and efficient fighting aircraft."<sup>1</sup>

As steps were taken to attain the authorized recommendation by the Father Board and as the European development of aircraft proceeded at an unprecedented rate, the feeling developed that changes were needed

in the contractual authority of the War Department. L. J. Fleet, president of Consolidated Aircraft Corporation, pointed out in early 1938 that legislation was before Congress to encourage domestic and foreign operators of aircraft, and that similar encouragement was needed in the fields of aircraft design and construction if America was to maintain the pace set by foreign powers. Since modern aircraft development was becoming so costly, the manufacturers could not well proceed with the creation of new models under the existing system. He suggested, therefore, that the government obtain the assistance of industry at "actual cost plus a reasonable fixed-in-advance fee, not increasing in the form of a percentage as the cost continues through to completion, as was the practice in wartime 'cost plus percentage' contracts." This method would give incentive to buyer or seller to accomplish the desired result at the "lowest possible cost since he gains on quarter of the swing while the Government saves the other three quarters." Fleet thought that the War Department should be enabled to deal "fearlessly, intelligently and economically" in the interest of the government and not be "forced to deal longer under an inadequate law that invites charges of scandal."<sup>3</sup>

Nine months later, in November 1938, the Chief of the Air Corps recommended that legislation be submitted authorizing the secretary of war to procure aircraft upon a negotiated basis, without competition, when in his opinion the government requirements could not be fulfilled under the existing procedure.<sup>4</sup> In connection with the numerous measures introduced to carry out the President's aviation expansion program of 12 January 1939, a bill (H.R. 600) was introduced into the house on 7 February. This bill contained many provisions relative to methods of procurement of aircraft,

among them the statement that "contracts, with or without such competition in the discretion of the Secretary . . . may be on either a fixed price or a fixed fee plus actual cost basis and may provide for periodical progress payments." Also, the profit limitations of 10 per cent as provided in previous legislation (15 Stat. 500 and 19 Stat. 1823) would be removed.<sup>5</sup>

That measure, quite elaborate in its terms, was not approved by the chief of the War Materiel Division because all the desired procurement legislation was provided for by H.R. 3518, which had been introduced on 31 January.<sup>6</sup> The only procurement legislation in H.R. 3518 however, concerned authorization of purchases and said nothing of methods. The proposed procurement legislation, prepared in the Office of the Assistant Secretary of War, was being held until the President returned and the military affairs committee was in a "receptive mood."<sup>7</sup>

The various Air Corps measures were consolidated into H.R. 3791,\* but this act contained nothing that would change procurement procedures or limit profit. In the hearings which preceded the introduction of this bill, General Arnold emphasized that he was not opposed to the competitive bidding system, but the problem was to get the planes in the time allotted. The only way to do this was to cut the entire industry--much of which was then idle--to zero. Under the existing system this was not possible since authorities could declare only one winner and award only one contract in any competition.<sup>8</sup> General Arnold emphasized that, through its auditing system, the Air Corps knew very well the costs of production of various types of planes and could negotiate contracts that would not allow an

\* See above, p. 6.

unconscionable profit. In discussing competitions requiring the submission of single aircraft, the Air Corps chief stressed the fact that models had increased enormously in cost, and the Air Corps was allowed to purchase only one winning entry. The unsuccessful competitor could be reimbursed in two ways: (1) sale abroad, or (2) sale to the government. General Arnold felt that since many of the losers' bids present articles with valuable features, sale abroad was not desirable. The Air Corps proposed, therefore, to buy "only the design and one airplane each from the next two unsuccessful bidders." Only 80 per cent of the manufacturer's cost would be paid.<sup>9</sup>

H.R. 3731 as it passed the House contained no provisions relative to rates of procurement or profit limitations. The Senate committee added no provisions on this, but on 6 March Senator C.W. Lobe ( . . ) offered an amendment which provided that all profit limitations applicable to the procurement of naval aircraft should be applied to Army aircraft. This means that all profits over 10 per cent would be returned to the Treasury, except that a loss for one year might be allowed as a "credit in determining the excess profit, if any, for the next succeeding income taxable year."<sup>10</sup> In the Senate hearings General Arnold did mention 10 per cent in connection with profit limitation but emphasized that he thought the industry should have a "fair" profit. While the exact meaning was not clear from the immediate statement, it appears that he did not intend for his statement to be used in addition of a 10 per cent profit limitation provision such as Senator Lobe proposed.<sup>11</sup> Considerable discussion ensued in the Senate, but the amendment became section 14 of the bill as passed on 7 March 1939.<sup>12</sup>

The following day the Finance Division pointed out to the Plans Division that the amendment did not guarantee a 10 per cent profit but did prevent a larger return. The 1935 audits revealed that on Air Corps contracts the average profit had been 12.55 per cent; on air-lane contracts, 10.66 per cent; on engine contracts, 1.17 per cent; on accessory and miscellaneous contracts, 24.21 per cent. The so-called excessive profits were, therefore, limited to the last category which was not affected by the provisions of A.R. 3731. Also, it was felt that this provision would result in higher prices and that the funds should revert to the Air Corps rather than to the Treasury. The results of the act could be "disadvantageous both to the Air Corps and to the contractors."<sup>13</sup>

The chief of the Plans Division recommended nonsupport of this amendment and in the communication to the Assistant Secretary of War pointed out that the 10 per cent profit limitation might be "entirely satisfactory" for negotiated contracts but "certainly unsatisfactory" for contracts resulting from competitive bidding.<sup>14</sup> The Secretary of War's letter supported this opinion. He emphasized that one year was too short a period to recoup possible losses and that since all competitions for quantity procurement for the Army must be accompanied by physical airplanes constructed at the expense of the bidders, the burden would be more onerous than previously. He maintained that enactment of the amendment would "seriously interfere" with the placing of orders for Army aircraft.<sup>15</sup>

The War Department's opposition to this portion of the bill had a definite effect. The conference committee modified the original amendment so that a 12 per cent profit was allowed on all contracts for aircraft or portions thereof, and the time limit for making up losses or deficiency

of profits was increased from one to four years. A significant addition provided that when aircraft were procured as a result of competitive bids requiring the submission of sample aircraft the Secretary of War was authorized to purchase one sample aircraft from not more than three unsuccessful competitors. These planes were to be purchased in order of their merit, and not more than 75, 60, and 50 per cent, respectively, of the actual cost was to be paid.<sup>16</sup> The measure became law in this form,<sup>17</sup> thus allowing a percentage of profit on airplane contracts that was almost identical with the percentage of credit on all Air Corps contracts in 1938, greatly increasing the period in which losses could be recovered, and granting the Secretary of War certain freedom of action in the compensation of builders who had submitted aircraft in competitive bidding procurement.

In addition, on 18 January 1939, the Secretary of War had sent to the Secretary of the Senate and the Vice President a draft of a proposed bill authorizing the Chief of the Air Corps to procure, without advertising, certain aircraft parts or instruments or aeronautical accessories the character of which or the ingredients thereof "of such a nature that the interests of the public service would be injured by publicly divulging them."<sup>18</sup> The chief of the Material Division emphasized that attempts to place contracts for the new Air Corps program had shown that it was mandatory to have the above authority apply to aircraft if the 5,600-plane program was to be met.<sup>19</sup> This bill was introduced as H.R. 3135 by the chairman of the Committee on Military Affairs on 24 January, and the following day an identical bill, S. 1013, was introduced by Sheppard into the Senate.<sup>20</sup> S. 1013 passed the Senate without amendment, but the House Committee on Military Affairs provided that no purchase could be made under this act until the Secretary of War certified to the necessity of a secret

order and only after submitting the proposal to three responsible bidders.<sup>21</sup> The Senate agreed to the House amendment,<sup>22</sup> and the measure became law on 13 July 1939.<sup>23</sup>

This law did not prohibit quantity procurement of aircraft without advertising,<sup>24</sup> but it did allow the protection of some of the detailed plans and specifications of the aircraft industry.<sup>25</sup>

In early 1940 the Materiel Division pointed out that this measure did not authorize open-market purchase of airplanes for "purposes other than those provided in the act."<sup>26</sup> Furthermore, it was restrictive, and it was felt that the intent of the restrictions was to "prevent any interference with the current methods of purchasing aircraft." The reason for this probably was based on just investigations of aircraft procurement.<sup>27</sup> The Materiel Division pointed out that Congress had added the "only objectionable part" of the bill, requiring submission to three responsible concerns. In attempting to change the law, no recommendations were made because it was thought it would be futile. The history of the measure was said to fit this best "not to raise this issue now."<sup>28</sup>

The Air Corps, in collaboration with the Assistant Director of Current Procurement, drew up rather radical changes in the aircraft procurement authority in early 1940, but the lengthy proposal was never introduced into Congress.<sup>29</sup> On 10 July 1940 the Assistant Secretary of War wrote to the President recalling their conversation of 24 May and transmitting a bill for the negotiation of contracts for the purchase of aircraft until 30 June 1941. The bill included a clause limiting profits to the 12 per cent provided by Public Law No. 13 (3 April 1940), and the Assistant Secretary pointed out that he and the Chief of the Air Corps had already discussed the measure.

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with the concurrence of the House military affairs committee.<sup>27</sup> On that very day, . . . introduced H. R. 7111 into the House. This bill authorized the Secretaries of War and Navy to procure aircraft, parts, and accessories "in such manner and from such sources" as they determined to be necessary in the interest of the national defense.<sup>28</sup>

H. R. 7111 appears not to have been acceptable to the House committee, and on 13 Jul.,<sup>29</sup> a new measure was introduced. This bill, H. R. 7207, prepared in the Plans Division, G.C.C., and submitted by the Secretary of War on 10 Jul.; 1928, provided for split or multiple awards. Until 30 June 1911 the Secretary of War was authorized to award contracts (for aircraft, parts, and accessories) to the lowest responsible bidder who could satisfactorily perform the work or service required to the best advantage of the government or, if in the interest of the national defense, to award not more than three contracts. No contract was to be in excess of the price offered by the bidders, and the Secretary of War was to report to Congress on all contracts awarded under this act. This measure did not repeal any acts or prohibit any contracts then authorized but was additional legislation.

In support of H. R. 7207 the Secretary of War pointed out that it was not his desire to abandon competitive bidding or to resort to the proposed authority except "under circumstances where the public interest clearly requires such action." Unless other legislation were passed, there was a danger that the greater part of the contemplated measure might fall into the hands of a limited number of concerns which could not make timely delivery of the contemplated aircraft. A similar situation existed in regard to government-furnished equipment, so it was considered of "primary

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"intended" that the proposed legislation be enacted.<sup>30</sup> The House Committee awarded the bill to extend the authority to the Secretary of the Navy and reported it on 26 July 1939.<sup>31</sup> Meanwhile, an identical measure (H. 2803) had been introduced into the Senate on 24 July 1939 and was favorably reported two days later.<sup>32</sup> The Senate passed its bill on 1 August,<sup>33</sup> but on 31 July the House had passed over H. R. 7267 "vitia out prejudice."<sup>34</sup> It was not until 19 February 1940 that the House substituted the Senate bill for its own and acted favorably. The bill became law on 5 March 1940.<sup>34</sup>

As finally passed the law allowed the Secretary of War (or Navy), when contracts were awarded as a result of competitive bidding, to choose the bidder whom he thought could best meet the requirements, or he could split the award among as many as three bidders. These renegotiated contracts had to be reported to Congress, were subject to review by the President and the federal courts, could not exceed more than 12 percent over it, and were to be awarded only when such action was necessary in the public interest. Also, the law stated that no existing statute was repealed, abrogated, or suspended but that this was additional legislation. While this act did not grant full authority for negotiation of contracts, it did modify slightly the existing stringent regulations and made possible some sharing of contracts among the smaller producers who could not have received orders under the single-award system. This act helped to bring about an earlier delivery of aircraft and the creation of a greater productive capacity. As has been noted, it is not the intention of the Office of the Secretary of War to make extensive use of this authority, but it was considered essential in an emergency measure.

On 25 June 1940 Representative J. J. Cochran (D.) introduced H.R.

3152 to authorize procurement without advertising in all cases when the aggregate amount did not exceed \$100. Otherwise, any procurement made without regard to Section 3709 of the revised Statutes must have the written authorization of the head of the Department if the amount was in excess of \$500.<sup>35</sup> The bill definitely placed restrictions upon open-market emergency purchases. The Committee on Expenditures in the Executive Departments reported the bill, it was recommitted, reported again, and on 3 June was struck from the calendar.<sup>36</sup> Meanwhile, the Air Corps thought that the provisions would not be too restrictive and offered no particular objections to the bill. The Secretary of War, however, opposed its enactment unless it was made inapplicable to the War Department.<sup>37</sup>

The Air Corps, in April, spoke against any change in the profit limitation on Air Corps contracts unless they were technical changes for administrative purposes. If any were made, it was suggested that scientific instruments be exempted and that contracts for Army and Navy aircraft be combined in determining profit.<sup>38</sup> In President's speech of 16 May 1940 called for enormous increases in aircraft production, and the problems of profits and negotiated contracts became more acute. The Air Corps pointed out that negotiated contracts were essential to accomplish the program. The competitive bidding system was the occasion of unusual expenditure of time: 30 to 90 days for advertising; 30 to 60 days for evaluation of bids; and 60 days for approval of the evaluation board proceedings and execution of the contracts. Thus the minimum time was 120 days, and the process sometimes required as much as 210 days.<sup>39</sup>

On 20 May 1940 Representative Carl Vinson (Ga.) introduced H.R. 6622 to extend negotiated contractual authority to the Secretary of the

navy. In the course of consideration of this bill, amendments provided that all profits on army and/or navy aircraft should be limited to 7 per cent. This was modified by the conference committee, and as approved on 23 June 1940 and passed as Public Law No. 671, the act allowed 8 per cent profit. It also prohibited the use of cost-plus-a-percentage-of-cost negotiated contracts, limited to 7 per cent (of the actual estimated cost of the contract). The fixed fee to be paid in cost-plus-a-fixed-fee contracts, and made the above provisions applicable only to all contracts of \$20,000 or more.  
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On 21 July 1940, which provided for extension of negotiated contractual authority to the Secretary of War, was introduced in the House and was favorably reported the following day. \* 41 As the provisions of the bill, the authority of the Secretary of War was broad, and he was enabled to enter into contracts as such places as under such conditions as he deemed best. 42 Though the contractual authority was considered essential, the bill went through several changes which were acceptable to the War Department, and it became Public Law No. 703, on 2 July 1940. 43 The Secretary of War was given the same authority as the Secretary of the Navy, and the same restrictions were imposed regarding types of contracts and profits that could be made. That the War Department did not intend to throw overboard the competitive system was shown by a memo from the Director of Current Procurement. On the same day that H.R. 9350 became law, he stated that (1) negotiated contracts would be used only when essential to expediting the accomplishment of the defense program; (2) care would be taken to obtain a degree of competition by informal inquiry; (3) in any case where the contract was for \$500,000 or more, the approval

\* For other provisions of this act, see above, Chap. I.

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of the Secretary of War was required; and (4) the cost-plus-a-fixed-fee contract was to be used only when necessary to the interests of the United States.<sup>44</sup>

Three days later, 5 July 1940, an address of 19 June by the Acting Secretary of War was made public. In this he disclaimed all responsibility for the profit limitation contained in H.R. 9322 (Public Law No. 671), saying that he knew of it only a few hours before the committee took action. He expressed strong disapproval of the provision and thought that excess profits could be taken by taxes. The present state of "expansion," he said, would not have been reached had not the aircraft manufacturers been allowed "a livable profit to justify their experimentation under the capitalistic system." Congress should consider carefully what this might do toward prohibiting the expansion of private industry and toward retarding the armament program.<sup>45</sup>

These measures had caused considerable delay in placing contracts for aircraft. On 26 July General Brett, chief of the Materiel Division, stated that on 15 June he had been ready to negotiate contracts for 4,000 planes. The law was not signed until 2 July, and in the meantime the modification of the Vinson-Trammell Act of 1936 by Public Law No. 671--limiting profits to 8 per cent--had caused a scrapping of all contracts. Industry was still unwilling to sign the negotiated contracts because of the possible repeal of the Vinson-Trammell Act, the effects of which action could not be clearly foretold.<sup>46</sup>

Congress moved to rectify this condition by amending the second supplemental appropriation bill for 1941 (H.R. 10263) to allow 12 per cent profit on aircraft but retained the 8 per cent profit on naval vessels. General Arnold emphasized to the Senate committee that unless the 12 per cent profit

allowances were granted, the Air Corps would be forced to negotiate contracts on a cost-plus-sentimented-for basis. This is not desirable because it increases in the cost to future buyers the average profit of plane manufacturers for the past few years had been only 3 or 4 per cent.<sup>47</sup> This act was approved on 9 September 1940 without carrying any profit limitation provisions.<sup>48</sup>

Slightly less than one month later Section 101 of the Tax and Revenue Act of 1940 removed all profit limitation provisions on aircraft contracts.<sup>49</sup>

The authority to split awards granted by Public Law No. 423 (17 July 1940) to the privilege of negotiating contracts granted by Public Law No. 700 (3 July 1940) extended only to 30 June 1941. As early as 22 April 1941 a bill (H.R. 4476) to extend this authority (including the privilege of executing an unlimited number of aircraft) was introduced into the House.<sup>50</sup> At first the writer indicated the necessity of the legislation for the execution of an aircraft,<sup>51</sup> but the measure was not passed until the following year. The necessary extension of the acts for fiscal year 1942 was, however, provided by the regular military establishment appropriation bill for 1942.<sup>52</sup> When H.R. 4476 again came up for consideration in 1942, the Senate voted a amendment which extended the split awards authority, the negotiation of contract privilege, and the right of profit limitation until six months after the war, unless terminated earlier by a concurrent resolution of Congress or a presidential proclamation. In this form the measure became Public Law No. 550, on 3 June 1942.<sup>53</sup>

Meanwhile, several other measures were introduced for the purpose of "providing more effectively for the national defense" and of prescribing the method of supplying aircraft requirements. On 1 July 1940 Senator Joe T. Daniels (Ind.) introduced S. Res. 23 which stated that all defense contracts

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entered into by the United States should provide for the fullest practicable utilization of productive facilities, including the deployment of personnel "in as many areas as possible during each period of 24 hours."<sup>54</sup> The Air Corps pointed out that all consolidated contracts for aircraft, equipment, and accessories were being negotiated on this basis, and it favored the passage of the resolution.<sup>55</sup> The Secretary of War, however, pointed out that while he was in sympathy with the idea of summing the program forward, there was a difference in the time required to produce various articles, and therefore the degree of urgency varied. Unless the resolution were changed to allow the exercise of discretion by the contracting authorities, he was opposed to it as an unnecessary burden on the contractors, a needless expense to the government, and a creator of additional storage problems.<sup>56</sup> The resolution died in the Senate military affairs committee.<sup>57</sup>

The entry of the United States into the war soon brought the revival of the Overman Act of World War I in the form of the First War Powers Act. On 15 December 1941 Representative Lester L. Muncy (Texas) introduced H.R. 6200. The second portion of this bill gave to the President, and those acting for him, the power to enter into contracts, or amendments or modification of contracts, without regard to the provisions of law wherever he believed such action would facilitate the prosecution of the war. No cost-plus-a-percentage-of-cost contracts were to be used. The measure was speedily enacted, becoming law on 18 December 1941.<sup>58</sup>

By the early part of 1942 it had become evident that changes in methods of production and the decrease in costs resulting from mass production made possible certain savings on negotiated and competitive contracts. Consequently, a provision was added to the sixth supplemental appropriation act for 1942 authorizing and directing the secretary of each department to insert

a new position clause in all contracts of \$100,000 or more. Renegotiation was to be accomplished at 3-year or periods when the Secretary decided that profits could be determined with reasonable certainty. If no profits were considered excessive, the Secretary was authorized to withhold further payments in the amount of the excessive profits, or if less, he was already entitled, to recover an excess amount. All savings resulting from contract changes or cancellations were to revert to the Treasury.<sup>59</sup> This last was to remain in force for three years after the law. With the exception made later in 1862 and in 1863 in the middle of 1863, but they did not alter any fundamental provisions of the above enactment.<sup>60</sup>

Responsibility for the fulfillment of contractual provisions was directed as follows: in 1869: the Secretary of War in his direction; the Assistant Secretary of War in his supervision; and the chief of the Supply and Services branch "administering the executive functions in connection therewith under the direction of and subject to the approval of the Secretary, or of the Adjutant."<sup>61</sup> The chief of the Air Corps was thereafter responsible for the procurement of supplies peculiar to the Air Corps, and he exercised this authority with the approval of the Adjutant and Secretary of War through the chief of the Air Corps' division.

With the intent and the use of procurement in late 1869 and early 1870, a division of purchase and supply in the Bureau of Ordnance was created to coordinate all "execution of all major financial orders and contracts." All major purchases (\$100,000 or more) first were submitted to the Director of Purchases and Contracts, Office of the Assistant Secretary of War, before being presented to the Army Ordnance Division.<sup>62</sup>

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The selection of subordinates used in the staff of the Air Corps in, no indication was, until now, to the command of the Service Division, after the first part of 1912 until orders were issued no other authority than the general. Contractors for \$10,000 or less needed to be provided with a copy of the contract, a technical division, will show all the amount \$10,000,-  
00 required only the approval of the chief of the Technical Division.  
The Chief of the Air Corps had to receive written instructions. It was not a  
matter of execution in which he was not concerned, but all - flight - air corps  
branches under his control of 3 March 1910 required the approval of the amount  
of \$10,000 and amounts of \$5,000,000 or less required his  
approval.

With the organization of the Army in 1912 and the establishment  
of the Service of Supply (Intelligence Service, War Dept.),<sup>34</sup> said to be  
performed by the War Department, the Service of Supply was charged with the  
transportation of all - tonnage except that relating to the Air, which was to be  
transported by the Army. Organization of the Service of Supply is a case of regu-  
lations required, for a short time, in carrying the Commandant General,  
and Air Forces for the time of occurrence at command.<sup>35</sup> This is only a  
temporary which will be corresponded, and be the majority of Air Corps  
proposed that the highest internal Control should be held by the General. The  
Commandant General, the Adjutant General, and the Assistant  
Secretary, as well as the Air, as the chief - officer of the, as far as to re-  
solving any question which might occur between the Service of Supply and the  
Service Forces.

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Chapter IV

RESEARCH AND DEVELOPMENT

One of the most important phases of materiel activities in the period 1939-44 was research and development. Unless sufficient and effective utilization were made of the fundamental work of the aerodynamics experts, it was entirely possible--and likely--that much of the effect of the huge expenditures would be nullified by the production of planes inferior in performance to those of potential enemies. The basic research for both the Army and Navy was conducted by the National Advisory Committee for Aeronautics (NACA), while the Army agency for applying these findings was the Materiel Division (later Command) located at Wright Field. Legislation for this activity falls into two categories: (1) the authorization for new facilities and (2) the granting of appropriations for the NACA and the Air Corps.

In the few years prior to 1939 other nations of the world had expended much larger sums for aviation development than had the United States. The inevitable result was that those nations had research facilities far superior to those of the United States at the time the expansion program was inaugurated in 1939. The unprecedented augmentation authorized in that year called for a strengthening of research facilities if the full benefit was to be reaped from the expenditure of money appropriated. There were, then, several bills in 1939 which sought to encourage, increase, or strengthen aeronautical and general research and invention.

On 3 January 1939 Representative Melvin J. Maas (Minn.) introduced H.R. 93 which provided for the setting up of a national defense commission

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on inventions to be composed of a civilian appointed by the President, two Army officers, two Navy officers, the Chief of the Air Corps, the Chief of the Bureau of Aeronautics, and four others of Congress, from the Senate and House military and naval affairs committees. This group was to receive, review, and pass upon the merits of all inventions, discoveries, and other devices submitted to the government for use in national defense and was authorized to build and test models of devices believed to warrant such treatment and expense.<sup>1</sup>

The Air Corps Material Division thought that the bill needed clarification, but felt it should be supported if only on the selfish grounds of ridding the Air Corps of the burden respecting aeronautical inventions and to insure means of developing inventions by those individuals who were unable to incur such expense. The Plans Section admitted that the bill would have the above and other advantages, but there were also several disadvantages. Among these were: (1) the membership was too large and "too high-placed" and (2) the proposed commission would duplicate the work of the NACA and the Patents and Design Board. The disadvantages, it was held, far outweighed the advantages, so it was recommended that the bill not be supported and that this be accomplished by introducing, if necessary, the authority of the NACA and the Patents and Design Board. The Plans Section of the Air Corps found nothing in the bill which should "elicit favorable recommendation."<sup>2</sup> The bill died in committee.

Two months later, March 1939, Senator Carter Glass (Va.) introduced S. 1708 which provided for the establishment of a government-owned, government-operated engineering aviation center. This center was to manufacture airplanes primarily as a yardstick for production costs and was to function

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as a backmarker in research developments. A sum of \$25,000,000 was authorized for the center.<sup>4</sup> The Air Corps prepared a letter for transmittal to the chairman of the Senate military affairs committee in which it was pointed out that (1) a good justification for a Surin manufacturing costs and profits already existed in the War Department's existing system; (2) the government was obliged to enter in this manufacturing field in competition with private industry; (3) only about two general types of airplanes could be built in one plant, and since the Air Corps needed about 12 types the contribution of this plant would not be very great; and (4) the War Department opposed the passage of the bill.<sup>5</sup> The Senate committee held hearings on the measure, but it was never reported.<sup>6</sup>

A similar bill, H.R. 5197, was introduced into the House on 21 March 1939, but no action was taken on it. Nearly two years later, 17 February 1941, Senator Hill reintroduced his bill as S. 826. The opposition of the War Department was more pronounced than previously, and it was stated that the creation of such a center would be "unsound" and "unnecessary." Again,<sup>7</sup> no action was taken.

Meanwhile the whole issue of the inadequacy of research facilities had been aired in committee hearings, and money had been sought for a new laboratory. General Arnold stressed the significance of research as a means of most efficient utilization of funds and noted that Germany had five research centers comparable to the one at Langley Field. One of the most vital needs was a 400-mile-an-hour wind tunnel for research on higher speed planes. The Air Corps' estimates for research and development had been cut \$1,000,000 by the Bureau of the Budget, and General Arnold thought \$6,000,000 instead of \$6,000,000 additional (to the regular 1940 appropriation)

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ation of \$5,000,000) should be appropriated for these items. He also emphasized the necessity for another AIC laboratory and for aircraft requirements of the Air Corps to be fully met for a period of years. In his regular appropriation for fiscal year 1940 the AIC had received \$1,700,000, of which \$400,000 was to be used for beginning the construction of a wind tunnel.<sup>9</sup> The 1940 appropriation request of \$8,100,000 was readily granted. In the first, provided for an increase in a research and an addition of \$10,000 for continuous wind-tunnel construction.<sup>10</sup>

With introduction into Congress of legislation for the Air Force Commission, additional funds were sought by the AIC for research and for an laboratory at Sunnyvale, Calif. The sum of \$20,000 was requested for research, to clinical investigation, and special reports; \$2,110,000 for the extension of laboratory facilities, and \$4,000,000 for land to use at Sunnyvale. Dr. Maurice Bush, vice-chairman of AIC, and Dr. George Luis, director of aeronautical research for AIC, testified to the back-bone of the unit in its basic research and to the importance of these appropriations in over-riding this position.<sup>11</sup> John L. Victory, secretary of AIC, pointed out that recent events at which basic aircraft battles could be won factors in laboratories, without bloodshed. It was, therefore, a common-sense business proposition to base expenditures upon the best research results. "To have superior aircraft will be worth all its costs; to have inferior aircraft is but to invite disaster."<sup>12</sup>

Although it had been planned that there would be no duplication of effort between the Langley and proposed Sunnyvale laboratories, the Board felt that the additional facilities are not warranted until covered the appropriations for the .<sup>13</sup> The Chief of the Air Corps and the Chief of

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The Navy Bureau of Aeronautics recommended that the Senate committee reinsert this item and maintained that this was an emergency project.<sup>14</sup> The committee did not respond favorably to these urges, but on 17 April 1930 Senator Miran Johnson (Calif.) offered an amendment providing for \$4,000,-  
000 appropriation and \$10,000,000 contractual authority for the Sunnyvale project. Senator Alva P. Adams (Colo.) offered an amendment striking out the contractual authority. The Senate agreed to the cash appropriation only.<sup>15</sup> The conference committee struck out the Sunnyvale appropriation, and the only allowance for facilities was \$2,140,000 for Langley Field.<sup>16</sup>

After the Senate committee had refused to allow the Sunnyvale appropriation, some newspapers declared it a "pity" that the House should have been followed in this respect. The New York Times of 18 April thought that the rotted defense of the bill should have been sufficient to convince Congress of the project, but certainly the arguments of its emergency character should have been convincing. It said that "to refuse the research appropriation asked is, in hardly fairce, to hold in as the project and let out at the bung. No other sectional considerations to enter into such a decision would be something less than untrustie."<sup>17</sup> The Washington Evening Star of 18 April thought it was still not too late to rectify an error that might be the difference between victory and defeat in case the United States became involved in a major conflict. It emphasized that defense could not be static, and in case the laboratories at Langley should be destroyed, the enemy would be a "long way toward aerial supremacy." At the security standpoint, if for no other reason, there should be at least 3 laboratories. This later became evidence of sectional conflict.

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in the defeat of the proposal, and said:

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It would be little short of criminal if our national security in this matter were to be sacrificed to a matter of sectional pride or mere political expediency. And it appears that some of this feeling may be behind rejection by the House and Senate committees. . . . the cost is irrelevant. It is less than that of providing a squadron of four-engine bombers; 1 percent of the cost of the air defense program will do the job.

The Evening Star concluded that the crisis of rejection should not end the fight and that further efforts would be made.

While this requested appropriation was being rejected by Congress, the supplemental military appropriation for 1940 was under consideration. In the estimate an additional \$100,000 was sought for Air Corps research and development during the fiscal year 1940.<sup>19</sup> General Arnold said it since his January appearance he had studied the research and development program and concluded that engine and pursuit-plane development must be emphasized to a far greater degree than in the past. In these categories the United States was far behind foreign nations, only the heavy bombers of the United States being definitely superior to foreign types. The \$3,000,000, together with the regular appropriation of \$4,000,000, he maintained, would meet only the minimum requirements; \$6,000,000 would be required annually for the next five years if the United States were to outstrip other nations in research.<sup>20</sup>

The Chief of the Air Corps also brought out the necessity for another AC-1 laboratory but stated that this additional research facility should not be tied to the immediate procurement objective. Any new facilities, he said, would be for the future and not the present. This would be true because of the time element. General Arnold stood against the expansion

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of the Langley laboratory, saying it would be a waste of money, and he indicated once there would be need for three or four or five laboratories in the future. Queried on research in universities, he answered that these institutions did not do fundamental research but studied means of adapting a certain design to production. If the universities were allowed to expand their activities too much in this respect, the Air Corps would lose control.

The House committee added \$2,000,000 for research and development, adding a total of \$4,000,000, which was granted to the Air Corps on 1 July 1939.

As the Washington Evening Star predicted on 16 April, additional attempts were made to provide for another NACA research laboratory. For more than a long time coming. On 6 July 1939, Representative John T. Costello (Calif.) introduced H.R. 6200 which authorized an appropriation of \$10,-  
000,000 for the U.S. to construct and equip aeronautical research facilities at Sunnyvale, Calif.<sup>21</sup> The Air Corps strongly recommended Air Department support for this bill. It was emphasized that practically all of the fundamental and basic research in aeronautics was being done at Langley Field by the NACA, and those facilities—which could not be expanded there because of space limitations—were inadequate to meet the demands of the Army, Navy, and manufacturers.<sup>22</sup> The military aircraft of the United States had not kept pace in performance with the craft of the major foreign nations because<sup>23</sup>

basic and applied research facilities . . . have not been expanded so extensively as they were in these foreign countries. If we are to regain a position of equality in the manufacture of aircraft with foreign countries, research facilities must be made available, and a planned research program instituted. Considering the geographical distribution of the aeronautical industry in the United States, another basic research center, with improved facilities, should be established on the East Coast.

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Sunnyvale was recommended as a suitable location because of the available land, the favorable climate, and the near-by labor supply.

Three days later Representative John Z. Anderson (Calif.) introduced H.R. 6216 which was identical to H.R. 6200, and on 18 May Representative John M. Houston (Kans.) introduced H.R. 6399 authorizing \$10,000,000 for an aeronautical research center at Wichita, Kans.<sup>26</sup> The Air Corps pointed out that these bills were identical except for the proposed location. First priority should be given, it was thought, to a West Coast location because of the industrial concentration there. H.R. 6200 would be favored only if approval for two laboratories could be secured.<sup>27</sup> The Secretary of War thought that H.R. 6399 would benefit the central portion of the aviation industry and would therefore be in the interests of national defense.<sup>28</sup>

Other bills were introduced by representatives seeking NACA laboratories for their states. On 23 May, Representative Joinings Randolph (W. Va.) presented H.R. 6476 which authorized spending \$5,000,000 for facilities at Morgantown, W. Va.<sup>29</sup> The War Department felt that Morgantown was the least desirable of the three proposed locations; it was too close to, and no more readily accessible than, Langley Field, and therefore first consideration should be given Sunnyvale and Wichita.<sup>30</sup> The last bill for an NACA research laboratory--this time for \$10,000,000 at Denver--was introduced by Representative Lawrence Lewis (Colo.) on 14 July 1939.<sup>31</sup> In approving the Sunnyvale project the Secretary of War on 28 July emphasized that the passage of H.R. 6200 or H.R. 6216 would best serve the interests of the air arm. He did feel, however, that a stipulation should provide that the site be designated by the War Department. In that way the War Department's interests would be fully protected.<sup>32</sup> None of these bills emerged from committee.

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The legislation provided time to submit the . . . 7122, the third Jew  
Bill, a separate bill for 1,10,000 before the House. The estimates  
provided for an appropriation of 4,000,000 and contract authorization of  
3,000,000 for the construction and equipment of another 100 laboratories,  
the location of which was to be determined by the <sup>33</sup> Senate. In the hearings,  
Mr. J. J. Abbott, of DC, reiterated his arguments that had been  
advocated previously: (1) the project as necessary to the national de-  
fense; (2) the Navy should not be denied because (a) it is more wise to  
concentrate all facilities in one place, (b) the space was limited and ad-  
ditional space was not available, and (c) over 50 per cent of military air-  
craft production is located on the Pacific coast between Seattle and San  
Francisco; (2) Germany's submarine fleet is being developed by experts;  
(+) there would be no duplication between the U.S. and Germany; and (3)  
there would be inefficiency resulting from geographical separation be-  
cause some work could not be given the power of the <sup>34</sup> Air Corps. Charles E.  
Mackay suggested that there is no need for the U.S. and Great Britain to catch  
up in aeronautical development unless new research facilities were created.  
While he thought that his country should be a part of the Comint, he felt  
that there should be an engine research station "somewhere in the eastern  
section of our country."<sup>35</sup>

The Senate voted recommended that the 10,000,000 be divided to  
1,100,000 cash and 8,900,000 contract authorization instead of 4,000,-  
000 and 3,000,000, respectively. This was acceptable to the House and  
Senate, and so "a week after [the] <sup>36</sup> 7122 became law," that is,  
after less than a half year, the production of many bills, and the  
introduction of a single bill after considerable measures, Congress

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authorized no research facilities which were vital to the production of  
an efficient military aircraft.

The independent offices appropriation bill for 1941 carried "C. es-  
timates of \$6,000,000. Of this \$1,100,000 is for additional con-  
struction at Langley, and \$2,000 is to care for part of the contract  
authorization for the new test laboratory at Forest Field near Langley.  
Dr. J. Robert Oppenheimer pointed out that the growth of U. S. laboratories and  
experimental places had to be kept in expansion and taken place in  
the use of aircraft for military purposes. While soon pursuit and bomber  
aircraft are probably too slow, the P-38 is helped by (1) the type  
of engine it carries which can handle fuel and oil for research could be  
increased and (2) it has sufficient armament to conduct an experiment.  
However, even authorized, how the "C" been called upon to provide so much  
information to help improve performance, but funds for our research pro-  
grams are limited "to a large extent by the financial needs of our military  
services."<sup>37</sup>

The request to be quickly granted by the House and Senate, which is  
not likely to be done before Christmas. In addition to working toward the com-  
plete laboratory, the Radio Research facilities at Langley were  
to be increased to about \$1,500,000. At Langley, Hanover, sea-  
port, and at the Naval Air Station, the first in speed cap-  
abilities, the construction was also begun. The fee for research  
independent, experimental activities was increased from \$5,000  
(in 1940) to \$10,000.

By the time the above measure had been enacted the Germans had swept over parts of northwestern Europe, and soon France's fall became inevitable. In the first supplemental appropriation bill for 1941 funds were requested for the establishment of an NC engine research laboratory. Some opposition developed on the floor of the House to the granting of the \$2,000,000 cash and \$6,400,000 contractual obligation. The proponents of additional funds for research came to the support of the bill, citing letters from the Special Survey Committee on Aeronomical Research Facilities,<sup>39</sup> which indicated a drastic need for engine research and urged immediate action. This plant was to be for engines, what Langley was for planes.<sup>40</sup> The attempted restrictions were defeated, and the new labor code was authorized on 26 June 1940. In addition to the \$2,000,000 cash and contractual authorization of \$6,400,000 for the engine laboratory, 1,200,000 was voted to construct a new electric power plant at Langley. This last item was made necessary by the increased facilities there in the preceding year.<sup>41</sup>

The increased personnel required for the new laboratories and the funds to fulfil the contractual obligations for the two laboratories,<sup>42</sup> in California, and the engine laboratory, located near Cleveland, brought the fiscal year 1941 requests for NCAR to \$13,301,810. Of this amount, \$5,600,000 was to be applied to the engine laboratory and \$8,400,000 to NCAR. Bush stated that in fiscal year 1942 NCAR would conduct research exclusively on aerodynamic problems while the \$11 amount of work for aircraft that was being done at Langley would be transferred to the Cleveland plant. The House committee, reporting favorably on the appropriations, emphasized that the scientific research for the NCAR was the "most fundamental activity of the government in connection with the development of America's potential

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strength in the air. No matter how many aircraft are produced, nor how many pilots are trained, unless the aircraft are at least equal in performance to the best produced by any other nation the whole expenditure may be largely wasted."<sup>43</sup> The committee made no mention of L.C.A. funds, and the cuts were approved on 5 April 1941.<sup>44</sup>

As the situation grew worse for the Allies, plans for aeronautical research facilities expanded. In June of 1941 the LCC sought L.C.A. efficiency funds for 1941 and additional funds for 1942. Mr. Bush explained that there were three reasons for the necessity of increased allowances: (1) in so treated work load made it necessary to utilize the Langley facilities in every possible way; (2) changed plans called for a larger engine-testing wind tunnel; and (3) the increased cost of production made it impossible to equal cost facilities at the original estimate.<sup>45</sup> The House committee approved the requested 4,750,000 general appropriation, \$75,000 for command and additional construction at Langley, and the additional contract authorization of 4,900,000 for the Cleveland plant. The authorization for the latter item was raised from 1,000,000 to 14,600,000. The appropriations received final approval on 3 July, 1941.<sup>46</sup>

Very soon it was evident that more funds would be required for L.C.S. Jerome Hunsaker, the new chairman of L.C.,<sup>47</sup> said that LCA was not living up to its responsibility and could fall further behind unless more were done in the way of creating facilities. An increase of 3,207,500 was sought for the L.C.S. laboratory, which 2,407,500 was for an additional and "different" type of wind tunnel. The sum of \$31,425 was needed for construction at Langley, and 1,102,575 for a general appropriation. These sums were made available on 23 October 1941.<sup>48</sup>

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Between this time and the end of 1943 no new projects for NACA were approved, but the Cleveland, Langley, and Ames laboratories were constantly expanded and equipped to meet the new demands. Of the total appropriations of \$19,032,736 for 1943, \$7,071,000 was for Cleveland and \$6,000,000 for N.A.C. Shortly before this, however, an additional 1943 appropriation had provided \$3,500,000 for Cleveland, and had raised the amount that could be expended on the facilities from \$3,000,000 to \$8,171,000.<sup>49</sup> This limit was again raised on 16 March 1943 when another \$2,100,000 was appropriated for Cleveland and \$111,000 for Langley. The general appropriation was \$8,250,000.<sup>50</sup> By the time these sums were granted, the construction of the engine research plant was practically completed, and the amounts to be used primarily for equipment. At the hearings on the bill NACA officials pointed out a very important research development--the low-drag wing, which was one important factor in the efficiency of the -451.<sup>51</sup>

In the hearings on the regular appropriation for 1944 Hunsaker summarized the picture since the last few years. Since the research expansion of 1937 the NACA had received construction appropriations amounting to \$8,507,426, and the staff had expanded from 446 in 1937 to a proposed 4,410 for fiscal year 1-44. Several units of the engine research laboratory were already in operation, and some 88 aeronautical research projects had been started at 60 universities. The 64 per cent grossed increase in personnel brought the general appropriation to \$15,672,000; \$8,707,500 for NACA; \$60,000 for construction; and \$14,000 for printing and binding, a total of \$19,433,500. These sums were approved on 26 June 1944.<sup>52</sup>

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Report on 7-1 of 1916 one. Committed that the United States had  
placed the lead in aeronautical research, and more funds were required to  
maintain such lead and to act up, through the creation of new types of  
aircraft, to aircraft as Mr. R. L. G. However, a survey revealed  
that V.C. - proposed will be too costly and would cost out of their  
program. An F. W. Conner Commission study said the need of 1,700 em-  
ployees at Langley, but the F. C. maintained it could use over 700 at  
Langley and 700 at Cleveland. Some progress could now be made in the  
revised \$3,000,000 aeronautics program at Langley so the 1,700  
employees could be effectively utilized. The request for \$210,-  
000 for Langley, \$2,764,863 for Cleveland, as well as \$750,517 for gen-  
eral expenses at Langley.

General Arnold and Vice Adm. A. S. Cunningham supported these  
recommendations, which were approved with little change. The new com-  
mittee provided \$30,000 the funds for personnel salaries, by the end of one  
year, see p. 1x, funds would be needed for only five instead of six  
months. An aeronautics bill to committee was emphasized the value  
of research to the program as noted with some faint initials.  
The C. to the A. A. reported the amount of the problem last year  
to be about 17,607,710 and not without further change.<sup>51</sup>

The independent office's appropriation bill for 1917 is shown in form  
as \$20,200,000 for the A.A.<sup>52</sup> The amount that actually went in public  
Law no. 621, approved on 27 July 1917, was \$3,200,000, which included  
\$1,000 for printing and mailing.

The first supplemental appropriation bill for 1918, which became public

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law No. 629 on 22 April 1944, allotted to the "7,000,000 for salaries and expenses, \$25,000 for construction and equipment at Langley Field, and \$100,000 for construction and equipment at the Aeroplane Engineering Laboratory at Cleveland, and \$1 of \$7,101,000.<sup>27</sup> Thus in the second session of the Seventy-eighth Congress there was appropriated for the year a total of \$7,004,600.

On 7 March 1945, President Roosevelt sent to the President of the Senate a request from the Director of the Budget for an appropriation for the sum of 10,300,000-- \$7,000 for salaries and expenses, \$4,100,000 for construction and equipment at Langley Field, \$100,000 for construction and equipment at the Aeroplane Engineering Laboratory at Cleveland. The First Readiness Appropriation Bill, which had already passed the House, had made no provision for the D.B.,<sup>28</sup> but the request of the Director of the Budget was granted, and the appropriation of 10,307,000 was added to the bill, which became public law No. 10, on 25 April 1945.

The independent version of the appropriation bill for 1946 was introduced in the House on 15 March 1945; it authorized, for the year, for fiscal year 1946, the sum of \$6,850,000, and \$10,000 for printing and binding.<sup>29</sup> The House committee observed that this was an increase of about \$1,000,000 over the 1945 appropriation and that it could provide full-time work for all employees including those on furlough. New York, 1946 and those necessary to start up the new construction installations.<sup>30</sup> There was no mention of the existing surplus of buildings or fittings or in the conference report,<sup>31</sup> and it was allowed by the House committee--

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36,011,000-- which is public Law No. 19, 1940, is a proved on  
July 18, 1940.

The responsibility of the Government in connection with  
the amount of 1,700,000, which is also contained in 36,011,000,  
which is a proved sum, is due to the U.S. Air Force, at 107,000,000.

Summarizing, the situation which arose in 1940, the Air  
Corps received from military funds, which were required for  
the utilization of the aircraft of the U.S. Air Force in 1940, in amounts which  
corresponded thereto called for 3,000,000 for research and develop-  
ment, but by agreement between the Air Force and the Air Corps  
and, 1,000,000, which was 100% of the amount required, was held  
in trust to be used for research purposes, so as to coordinate with the Air Force  
the development of aircraft, 1,000,000, which is 1,700,000 or a proved  
sum, the purpose of receiving a portion of the heavy bombing.<sup>12</sup> In the de-  
sence of any aircraft for 1941 for the Air Corps, the Air Corps called  
for a sum of 1,000,000, which was 100% of the amount required, so as to  
coordinate the development of aircraft, so as to coordinate with the Air Force  
the development of aircraft, which was 1,000,000, which is 1,700,000 or a proved  
sum, the purpose of receiving a portion of the heavy bombing.<sup>13</sup> In the de-  
sence of any aircraft for 1941 for the Air Corps, the Air Corps called  
for a sum of 1,000,000, which was 100% of the amount required, so as to  
coordinate the development of aircraft, so as to coordinate with the Air Force  
the development of aircraft, which was 1,000,000, which is 1,700,000 or a proved  
sum, the purpose of receiving a portion of the heavy bombing.<sup>14</sup> This  
last statement is a fact, and no such statement has ever been  
presented before the Board of the Air Force, nor will it be presented for review.  
However, there is no question of possibility of transferring funds from one  
to the other. The sum of 1,700,000 is a proved sum of 107,000,000.

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The greatly increased interest resulting from the President's message of 16 May 1940 soon brought requests for more funds, among other such larger sums for research. In the first supplemental appropriation for 1941, \$17,000,000 was set aside for research.<sup>65</sup> A controversy over research funds, in general developed in the House, but all restrictive acts were defeated and the bill became law on 26 June 1940.<sup>66</sup> No further research funds were sought until March 1941 when the fifth supplemental appropriation bill was under consideration and \$1,400,000 was requested. Of this amount, \$2,000,000 was for the development of a special type of airplane, apparently a jet-propulsion craft. This sum was granted on 5 April 1941.<sup>67</sup>

During this period important research and advances in the development of the diesel engine prompted the introduction of H. R. 145 on 17 June 1940. This bill provided for the establishment in the Department of a Diesel engine aircraft division for the purpose of studying the possibilities of the Diesel engine in connection with aviation. The War Department pointed out that by nature of its ability to use low-grade fuel the Diesel engine was far more important to certain European countries than to the United States. However, the existing Diesel engine did not give promise of military adaptability, and although development in the United States should be pushed, it was thought that this could be accomplished by the Navy in accordance with an agreement reached in 1939. The War Department could best cooperate, it was maintained, in the final refinement and adaptation of this engine to military use. The bill died in committee.<sup>68</sup>

In the military establishment appropriation bill for 1942

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\$12,576,000 was requested for the Air Corps for the "procurement and development of new aircraft, armament, and power plants for aircraft and accessory equipment."<sup>70</sup> Some of this sum seems to have been for use by other arms, and the Air Corps was to utilize \$9,310,000.<sup>70</sup> This sum was a small but very important part of the large authorization which was approved on 30 June 1941.<sup>71</sup>

Just before the entry of the United States into the war, an additional \$4,103,700 was requested for experimental development. This was intended to make adaptations in aircraft in light of the lessons that had been learned from the European conflict as to develop new aircraft. Some of the projects concerned troop-carrying, gliders and airborne tank-force transport equipment, power plants, superchargers, dual-rotating propellers, and the use of new steels and alloys.<sup>72</sup> No changes were made in any of the Air Corps requests, which were granted on 17 December 1941.<sup>73</sup>

As noted in Chapter I, the Air Corps appropriations, as well as those for other arms, soon proved to be inadequate amounts. The fiscal year 1943 bill carried \$112,276,000 for Air Corps research and development. This was to allow for the continued development of high-altitude aircraft, engines of increased power, armament, and associated equipment. The acceleration of the war in 1942 had advanced the service-test stage of much equipment, and therefore much more money was required than during fiscal year 1942.<sup>74</sup> On the floor of the House, Representative Charles A. Clinton (Mass.) expressed pleasure in seeing this large sum for research and rather chided the House for its refusal to agree to the Summerville research projects in early 1940. On 2 July 1942 the bill,<sup>75</sup> without changes in the Air Corps requests, became law.

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As General Arnold had indicated, this sum was sufficient for 1943; later \$9,361,065 was sought for 1944. Before the 1944 estimates were defended, a new important research center had been created. This was the AF School of Applied Tactics (later the Tactical Center) which operationally tested the material which had been developed at Wright Field and field-tested at Eglin Field.<sup>76</sup> As usual there was little discussion on the research items, and the funds became available at the beginning of fiscal year 1944.<sup>77</sup>

In allocating funds for fiscal year 1945, the AF allotted the sum of \$8,365,183 to research and development; of this amount, \$8,040,600 was for aeronomical research, the remainder being divided between medical and meteorological and climatological research and development.<sup>78</sup>

The military establishment appropriation bill for 1946 contained only a token appropriation of \$100 for the AF;<sup>79</sup> but the AF program for fiscal year 1946 called for an expenditure, from funds previously appropriated but not then obligated, of \$10,220,171 for aeronomical research and development.<sup>80</sup> This represents an increase of \$0,171,571 over the amount set aside for that purpose in fiscal year 1945,<sup>81</sup> but is less, apparently, than the amount actually spent in that year.<sup>82</sup>

In addition to the support given to the aeronomical research program by congressional approval of the appropriations, there were various efforts during 1944, and 1945 to enact legislation intended to give even further support to such research. There was a bill proposing to create an office of "military research and development" in the War Department. Another was introduced "to establish a research board for national security to insure the continual preparedness of the Nation along Purified and sound lines by providing for the application of

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Scientific research on aircraft structures." A third bill would have established a "National Research Commission,"<sup>63</sup> under which would have authorized an appropriation of up to \$10,000,000 per annum for grants, to be made on account of the Secretary of War, the Secretary of Commerce, and the Director of Civil Aviation, "for the purpose of aiding any individual or company in developing or experimental work in connection with the development of a new type of aircraft or the improvement of existing types of aircraft, or in connection with other aircraft, as in the opinion of the Director."<sup>64</sup> Still another bill authorized an appropriation of "such sums as may be necessary, not to exceed \$1,000,000,"<sup>65</sup> to enable the "National Academy of Sciences, through a research board, to do all that may be necessary in the field of civil aviation, "to provide for scientific research and advancement." No bills authorized the expenditure of funds for the development of aircraft or aircraft of Civil Aviation for the production of aircraft.<sup>66</sup>

The War Department objected to such proposed legislation on the ground that the national interest would be best served by "depriving direct appropriations to the Department of any financial assistance being used or no substantial effective research and development in the field specified,"<sup>67</sup> by the end of 1916 none of these bills had been enacted into law.

The story of congressional action on research and development activities in aircraft development is not so sordid, in the early phases of the aviation program, the war rather well took care for this work as it was so little available and much larger amounts for the procurement of aircraft. Work was kept at a subsistence level until

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vated by the fact that the results of airplane procurement were more physically apparent than those of the research programs. However, once Congress became thoroughly aware of the vital significance of the accomplishments of our basic research agencies, the funds requested by the experts were quickly made available.

LSDS-22

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Chairman V

Chairman of the House

The War Dept., like the Army Board, has favored the  
development of a machine gunner to serve as a controller as a  
device for keeping the target in view. This, however, presents  
several difficulties which must be overcome. More easily is it  
to manufacture them. With the onset of the civil war a relative  
calmness in Europe, a certain neutrality maintained by a large  
protection, but the War Dept. has tried to familiarize the Department  
with the various security controls and to relieve on all occasions  
that it could be manufactured in England or France. The reason  
was that our forces might be taken into this, and one of the  
best uses would be for increased production.<sup>1</sup>

In addition to increased productive capacity, there would also  
be need to have a number of guns: develop, control and use  
existing equipment; maintain it properly; and on United States  
ground or otherwise, store, transport, copy, and on United States  
ground or elsewhere, with control over it in one such a manner  
that it will not be used against us. It is believed it could be  
controlled by law and by a license. The War Dept. has a number of  
such laws, only from the security stand, however, other than those of  
the present or a previous one. Eric's manufacture is a power in itself  
which is injurious to the welfare of the United States. In regard to  
security, this is true, but the same could be avoided.

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or by the Chinese Communists, or been used in any other construction of the character of the Yangtze River, or any<sup>3</sup> Chinese structures, which may have been required so much as to constitute any infringement of any of the above mentioned conditions of release. In September 1935 on more than half of the reconstructed bridge, the Japanese authorities, in accordance with the terms of the original protection order concerning the reconstruction of the bridge,<sup>4</sup> in order to secure value and liability, had made good all the deficiencies, and to enable the Chinese Government to resume its use without further hindrance.<sup>5</sup>

The total cost of the reconstruction, according to the Chinese Government, was approximately \$1,000,000. In 1936, the Japanese Government, having been informed of the completion of the bridge, sent a memorandum to the Chinese Government, stating that the cost of the reconstruction was \$1,761,000, and that the Chinese Government should pay the sum of \$1,000,000, leaving a balance of \$761,000, and that the Japanese Government would be responsible for the remaining amount of \$761,000. In 1937, the Chinese Government paid the Japanese Government \$761,000.

In 1938, the Chinese Government, having learned of the arrival of the Japanese Ambassador, and the selection of a representative of the Chinese Government as an important diplomatic officer, as well as the arrival of such a representative, sent a cablegram to the Chinese Government, stating that the Chinese Government would be responsible for the payment of the balance of \$761,000.

On June 21, 1938, the Chinese Government sent a cablegram to the Japanese Ambassador, stating that the Chinese Government would be responsible for the payment of the balance of \$761,000.

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4.2

General purpose of flying trips, 20 Aug., was to determine  
if possible how to get into U.S. for clandestine purposes. It was also desired  
to get information on the cost of living, food, etc., prevailing now and p-  
ossible future prices. To do this he would go to Geneva, Switzerland, and the Republic of  
Yugoslavia and then east. About 17 days total, and cost of airfares, ice  
and other expenses, etc., were estimated as follows: Possibilities of  
leaving from New York or Boston were being considered as well  
as various flight routes between the U.S. and Europe. The first  
is flying, which could be done in about 12 hours, and the second by ship  
of 12 to 15 hours, and arrival would be about 10-12 July 1939.<sup>8</sup>

In an attempt to circumvent the first 12 hours by flight,  
it was decided to leave the U.S. prior to release of the vehicle, and  
arrive in Europe just before 1st July (1939) introduced in AF-2-60  
prevailing procedure or representation. It was a very difficult  
problem since it would be difficult to ship such a vehicle in  
one end of the Atlantic Ocean. Also, because of the size and weight  
of vehicle it would be out of place if placed on a ship. One  
solution was to be the United States. It was suggested that as to the  
bill could be put in the chain mail bag to whom the secret of  
the vehicle could be possible one would be given to the  
Chairman of the Committee on Science and Standards in the Committee  
on Legislative Affairs.<sup>9</sup>

After the Army decided on 18 October, during the hearings on  
H.R. 3791 in con. 1939, a bill was introduced in Congress to prohibit  
any experimental planes for secret purposes contrary to the  
ones which the Air Corps could be used previously at the War Department.  
Chiefly, it would prohibit aircraft manufacturers could not  
make aircraft for secret purposes without authority of the State Department,

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REPORTS OF THE 2000 BOMBINGS ARE TO BE PERTINENT: (1)

POST LOG CHARTS IN CENTER OF PIAF 1, 10 DECEMBER, ACCORDING TO SORIANO; AND (2) A CHART OF THE APPROXIMATE AREA SURROUNDED BY CDS TO THE WEST, WHICH PERTAINS TO THE PIAF 1, 10 DECEMBER REPORT ON THE 1993 BOMBING INCIDENT.<sup>16</sup>

THESE REPORTS ARE NOT TO BE PERTINENT: (1) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS A SUBSTANCE WHICH IS KNOWN TO BE A HIGHLY EXPLOSIVE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION; (2) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION; (3) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION; (4) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION; (5) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION; (6) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION; (7) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION; (8) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION; (9) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION; (10) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION; (11) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION; (12) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION; (13) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION; (14) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION; (15) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION; (16) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION; (17) A REPORT FROM THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION.

IN THE JOURNAL, PERTAINING TO THE 2000 BOMBING, RECORDS OF THE FBI LABORATORY INDICATING THAT THE BOMB WAS MADE OF AN UNKNOWN EXPLOSIVE, OTHER THAN AMMOXIDE, WHICH IS KNOWN TO BE HIGHLY DANGEROUS, AND WHICH IS KNOWN TO BE HIGHLY SUSCEPTIBLE TO IGNITION, SHOULD NOT BE PERTINENT, UNLESS IT IS SHOWN THAT THE ACQUISITION OF THE JOURNAL BY THE FBI WAS MADE FOR THE PURPOSE OF ACQUIRING INFORMATION CONCERNING THE 2000 BOMBING.

~~CONFIDENTIAL~~

Aug 21 1922, Waco, Tex.

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**DEPARTMENT**

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the suspension of the surveillance activities for four to six weeks, and then at least one final survey before the reactor is again put into operation. The survey should be made by competent personnel in the field of nuclear energy.

In addition (Item) 11.26.7, cc the same regulation, paragraph 11.26.7, the surveillance department should make arrangements to supply enough technical staff to meet the requirements of the inspection, and to have the authority to inspect the facilities in the establishment to ensure they are being conducted in accordance. It is stressed here that all the required personnel must be qualified and balanced so as to avoid any suspicion. It is also advised that it is virtually impossible to determine whether a ship is radioactive because a ship can be loaded, for example, with highly radioactive materials, or it is radioactive because the crew of the vessel did something wrong, but it is much easier to inspect the ship for radiation than to inspect the crew only.<sup>113</sup>

The clear limit for release of the ship is determined by the regulations for the protection of the environment, such as the IAEA, and also for the safety of the ship, and the deliveries made to the ship. An amount of 1000 becquerels per kilogram of the material, and it could be increased proportionately if the ship was carrying dangerous materials or radioactive materials. Therefore, if it is possible to increase the national defense, the ship would receive more frequent deliveries. If the deliveries were to be delayed for a long period, they would be forced to accept compensation or exceed the time period specified. Authorized journeys,

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I am, at this time, in no position to make any conclusions  
about the matter. If you will let me know what you have  
done up to now, I will be in a position to advise you.  
You can take the action you think best, but I would like  
to have your opinion before I do anything.

With regard to the subject of a nuclear hit to "Garrison" or to  
the power plant, we have no basis to determine whether or not it  
will affect our ability to run our bases which are spread out over  
a large area. General Shultz also said that "prior to my concurrence in  
any plan, we had to make sure that there was a very  
survivable supply of food, water, fuel and supplies for the P.R. I will  
conclude that the one office which can be the command center for  
our forces is already being considered, i.e., the White House. <sup>25</sup> In my opinion, it is also  
possible that we could consider the creation of a radioactive city which  
is unpopulated and, if necessary, could be prepared to do so.  
1.17. At the present time, there is no plan of organization  
which may be suitable, however, if necessary, I would suggest  
that the location of the P.R. should not be too close to population. This  
is not as I understand it desired by the President's staff. <sup>26</sup>

The White House is not a suitable place for the initial delivery  
of the first nuclear weapon because the delivery vehicle would be  
in the open sky. It would be difficult to deliver the weapon  
and it would be extremely dangerous to do so. General Shultz,  
however, has stated that he does not believe that it would be  
necessary to do so. He also said that the previous service of the  
President's staff and the (S.D.C.) should be considered as it may be

~~CONFIDENTIAL~~

AMEM-22, CHIEF, V.

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In all the cases of buying "dead" ships or ships not in commission, or -cases of ships which were built to specification, the  
U. S. Navy has the right to buy them at the price paid by  
the Government, and to have the same delivered to the U. S. Navy or  
to another shipper, provided that the ship is to be delivered,  
unfitting, or fit, and without any damage or defect of any kind.  
Transfer, selling, or "leasing" the ship, if it is "not in commission"  
unless the chief of naval operations or a like commanding officer  
orders otherwise, is prohibited, except in the defense  
of the United States. 1923 - see also section 14 of article 6  
Am. 671 on 22 June 1940.

In case of dead ships, a court may make a public announcement  
of those which cannot be sold or otherwise disposed of. This is usually  
done in the manner of a public auction, primarily to sell the  
articles of the ship, especially where there is a large quantity  
of dead ships in the port, and if the same cannot be placed  
upon the market, the United States should make an  
attempt to sell them. A "public" sale is one in which  
any person may bid, but "private" sales are limited to  
those persons who are entitled to bid, and include  
the dead ships. This will depend upon the particular  
circumstances of each case, as well as the law of the  
place where the dead ships are located.

It is not necessary to sell the dead ships to the highest bidder  
if the highest bidder is not a citizen of the United States  
or is not a citizen of the state in which the dead ships are located.

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AM-32, CH20. V

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and the following are included: the use of the right hand upon  
the left hand, the use of the right hand upon

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12. On 25 March 1945, the 2nd Co 1st Battalion 3rd Inf  
13. made up of 1000 men and 600 horses was sent forward  
14. officially to help, but was turned back at a point in the area  
15. where they never reached the objective. "Incessant AF  
16. attacks before," said Major C. R. H. T. (R. E.)  
17. who was in command of the 1st Battalion.  
18. 3rd Inf had been ordered to hold its position  
19. along the railway line because "a reservoir was close to the  
20. road ahead and the other" two battalions had been  
21. told to bring a nose to nose contact so need of  
22. supplies from the United States. To aid contact he resolved  
23. to send 2nd Inf from California, now, remained on the coast. "Based on the  
24. strategic importance of the English coast I paid for our party's expenses  
25. to get to Italy, but I have no money left to be reimbursed and I am  
26. furnished one dollar for my passage."

27. Since that date on 14th, we have been active in the air for  
28. 11 days uninterrupted by sleep or rest, as we have had none.  
29. In the first seven days of the last 1000 per cent of the time and  
30. either on land or in the air, we have been flying to the  
31. day with a 100% chance of getting shot down. At 23.30 we came to the  
32. bay with 100% chance of getting shot down. We expect to be shot down 20 times  
33. over 72.9 and 23.2. During the war to date, about 1000000 men  
34. of military planes have been shot down, 77.36% of which were  
35. destroyed by anti-aircraft fire, primarily by us, however, in  
36. the sky. General, while excellent this is the basis of the "stink"  
37. number in the United States. The case is somewhat peculiarly been  
38. referred to former general Grant could not think of the total losses  
39. suffered by the Union in the Civil War.<sup>17</sup>

40. I would like to repeat that I have been informed of

447713-22, Chap. V

BRUNNEN

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curriculum, & no foreigner has been allowed to enter our school of culture on  
any stage, except Prof. T. In our school we have been compelled to consider, however,  
that if the foreigner is to be admitted, he must be educated. Consequently  
it is necessary to have a teacher who can teach him the language of  
the place, & should be a good teacher. In view of the recent  
events, & crisis, the Foreign Office has been asked to furnish a list  
of such "good" teachers, so that we may choose the best teacher and  
afford our students the best opportunity of learning the language of their  
country. We have been assured by our teacher that we can easily accommodate  
in our school, a foreigner, & that our school is the only one in the  
country which has been able to do so. The Foreign Office has  
also stated that it would be better for us to have a teacher from  
another country, as it would be easier for him to understand our  
language, & our customs, & that he would be more likely to  
be successful in his teaching. The Foreign Office has also  
stated that it would be better for us to have a teacher from  
another country, as it would be easier for him to understand our  
language, & our customs, & that he would be more likely to

It would be sufficient to manufacture a "clean air"

LTHS-22, C.20. 7

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**RECORDED BY**

LAW-32, Ch 5

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وَالْمُؤْمِنُونَ الْمُؤْمِنُونَ الْمُؤْمِنُونَ الْمُؤْمِنُونَ الْمُؤْمِنُونَ الْمُؤْمِنُونَ

The first is to be a good and effective  
utilization of available space in order to fit  
the item in best and most effective  
manner. This is obviously important in business -  
but may be just as important for home. The  
second is to combine the old and new in the  
best possible manner. This is often where it runs into a problem  
because there are big units which can't be  
disposed of which is. Another example is a chair or sofa. If  
you can't buy another one, it may be a good idea  
to have a new one made. It is a good idea to have  
the old one reupholstered if it is in good  
condition. An other area is the kitchen. If there  
are certain pieces which don't fit the room it may be  
best to get rid of them or to have them  
repaired and refinished. In many cases  
it is better to have a flexible unit than  
a rigid one. A rigid unit will limit  
the use of the room.

AM 10-52, C-37, 7

14

Thus, as the author of the *Book of the Dead* says, "If you do not have  
in your heart the secret of the dead (the *ka*-ka-ja), he cannot find you  
empty, and if he does not find you empty he cannot find you in  
any sacrifice that you may offer, because it is the *ka* who receives the  
offerings, and if a person offers to raise the *ka* he is in error."<sup>150</sup>

and which were to be maintained by the government. The bill was introduced in the House of Commons on 22nd June 1911, and a provision was made for £100,000 to be voted for the first year, or for such longer period as may be required, and it was agreed that the amount should be increased annually. The bill was passed by the House of Commons on 22nd July 1911, and received Royal Assent on 23rd July 1911.

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MAPG-32, Sheet V

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the effects of the proposed legislation on existing and future business in  
concluded that the Air Corps, like others in countries like ours, has  
in the future right to rule.<sup>56</sup> The President's budget memorandum  
order, did mention, however, that ultimate victory would help  
the war effort and the administration. This was important since an acre  
and two dollars a day were to be paid, but the order, which is placed  
in a large pocketbook of documents, has not been learned in the  
sense of a ruling and its source of power; it is rather a form than to  
be so definitive as our statutes. It is, however, a good example  
of what is done in the name of the nation's welfare. The order  
is the result of long and careful planning by the Air Corps, and  
it is the obligation of Congress to give it the support of the  
people.

AMMO-22

SECRET

It was evident from the time of the first raid upon Berlin  
that the outcome of the war would depend, not on the size and  
the personnel of the opposing forces, but on the efficiency of each side's  
air defense system. If the war were to come, air power  
would be the chief factor. In 1943, Germany, under command of a  
of outstanding, if somewhat eccentric, General, had a fleet  
of aircraft carriers, providing a formidable force in the  
Atlantic. Although the war was still on, the British had  
convinced him of his foolishness and actually stopped him.  
At that time the continued advances of the aggressor nations had brought  
the German forces to a standstill in the Balkans and Russia and to a  
halt in the West and France. The capture of Yugoslavia by the  
Axis powers was to be the decisive moment which anticipated  
an air corps victory over the Allies.

The Air Corps victory was imminent, the victory of peace  
and world freedom assured, when suddenly, like a black lightning  
strike, came the news of Hitler's death. The Allies were shocked  
and dismayed at the news of the death of the Führer. The  
news came from a radio station in Berlin, which had been  
transmitted by the German radio station. The news was received  
at the British headquarters in London, where it was announced  
that Hitler had died. The news was received with relief and  
joy, as the Allies had been fearing the worst. Hitler's death  
was a great relief to the Allies, as they had been fearing  
that he would continue to lead the Axis powers to victory.

SECRET

## AIRHS-22, Summary

1

the following day, he was able to get his first job as a waiter at a local restaurant. He worked there for several months, saving up money to buy a boat. In 1985, he bought a small sailboat and began sailing around the coast of California. He eventually sold the boat and moved to San Francisco, where he found work as a bartender at a popular bar.

Fractional, like the one you have suggested above is to be filled  
down to the mark, so that there will be no waste or loss of water.  
The last part, is to be taken up and mixed up with the 3 drops,  
and the water dropped into the container, until it just reaches 50%  
of the container and all the water is re-dissolved, when it is to be  
used directly, and immediately. And so on, and so forth  
like this, until the water is 50% full, after which water may be  
added periodically, until it reaches 100%. Just rest, until the glue has been  
mixed thoroughly, and then pour it into the mold, and let the

AAFE-22, Summary

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Final - June 1954, by which time production was  
100% of target level, 12,750 AP loads.

The major cause for concern in the early stages was the  
unreliability of the P\* system due to the lack of experience with  
the new type of explosive used. It was later found that much of the  
problem was caused by the lack of knowledge of the explosive's behavior in  
various situations. During the initial stages, it was found that  
a 100% yield of AP, i.e., 12,750 AP loads per day, was not  
achieved until July 1953, or 22 months after the program began.  
At 17, 7000, the first 100% yield was achieved, but the  
AP load rate was still dependent on the number of AP loads produced - about  
10,000 AP loads. This is considered to be acceptable, but it must be noted  
that the yield of 100% "full" or "opinion," that is, where one  
load out of ten loads of AP loads is not 100% reliable. After  
the 10,000 AP loads, a curve of 12,750 AP loads per day is shown of  
which only 10,000 AP loads were reliable at that point in time.

A P\* production rate of 12,750 AP loads per day was  
reached.

One of the major difficulties faced with this war  
factory was the time lag between the introduction of a new system  
and its acceptance in favorable conditions. In this case  
the new system had to be evaluated prior to its use. It was  
estimated that it would take at least 10 days to evaluate  
a system and to determine its reliability on a given site. The chief  
contribution of the program was a great reduction of the time lag  
between the introduction of a mass production program and the attain-  

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\* In addition to the above time lag, there is a lag between the delivery of equipment, the arrival of supplies, and the start of production, which is approximately 1,610,000 AP loads per day.

ALFB-22, Summary

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Part of one's responsibility, in my view, is to provide to the public, those in Congress, the executive branch, and the public at large, objective information for the purpose of "fixing" or revising laws that are already known to exist, or are in a state of flux. As the public has either been lied to, or kept蒙在鼓里, the laws should not be so specific as they are now, so as to be able to be revised, unless they have provided a backbone for one's own accounting aircraft. We must be careful, however, because there will be no room for reaction in the accounting aircraft.

Concerning the matter of the law on resolution of the law of capture and give over, it is believed that the best course of action would be to have Air Corps, in April, 1939, submit a memorandum to the War Department, requesting that the law be revised to allow the Air Corps to capture and give over, without the need for a court-martial. If this were done, a judge would be able to consider human rights and the injuries to the individual, and, possibly, might even find that a court-martial was not in order. It is the opinion of the author that this is the best way to handle this situation.

The services of P. L. on taxes, for example, in April, 1939, to the Secretary of War, General MacArthur, in the memorandum could test "set and retain" and, or be in a position to have corrected. This, in turn, if successful, would be able to place contractors, who do work for the government, in a position, in the case of a court-martial, of being free from the full

~~SECRET~~  
AFNS-22, Summary

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of France and the amount of the sum paid in deduction of \$5,000  
to him, Comptre, on 2 JULY 1940, retained subject to the secret re of  
war to negotiate a settlement which he did so him secret re to a position  
the secret agreement on deduction re.

The authority for applying such a deduction of contract re fixed  
on 1 JULY 1941, and was intended to give a general military  
government a restriction by law to war. On 5 JUNE 1942 these  
were suspended until the end of the war, unless otherwise set by  
by a specific resolution or resolution, restriction. On 10 JUNE earlier,  
1942 L/12, however, provided for the termination of contracts.

A, releases effected, were done with contractual authority, is  
ratified. On 3 JULY 1942 the resolution provided that all or  
certain could be realized by contract for services. Action in the AF  
Corps concerned in a broad round is now necessary to take characterized  
resolution of the case of interference with the process of payment, the  
amount of \$100. L relief is reduced but for the period 1-40.  
such a decision provides for the circumstances, is on a paper P 40  
certification is available to the legislature to be given for  
information. A similar resolution is provided by the resolution  
authorizing the resolution. The resolution Comptre can be con-  
cluded and released. This will be done in the manner of the  
action in the case of the release, and it is difficult to release a large sum  
of money due to the release.

L is also now able to do so under authority of the  
resolution and a resolution to release. In this respect it is necessary to do  
nothing but, "and to release, a, before which time it is to be done in the  
same manner as the release.

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### Ann-22, Summary

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On the other hand, the author has not been able to find any evidence of the  
writer's so-called "new power of self-delusion" in the author's  
characterization of himself as "the author of 'The Great Gatsby'". If the author does possess  
such a power, it would be hard to prove that he does not exercise it.

وَالرِّفَاعُونَ وَهُنَّ أَكْبَرُ مِنْهُمْ فَلَمْ يَعْلَمُوا  
أَنَّهُمْ لَا يُفْلِتُونَ إِنَّمَا يُنذَّرُ بِمَا  
عَمِلُوا إِنَّمَا يُنذَّرُ بِمَا يَعْمَلُونَ

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AMHO-22, Summary

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REF ID: A6510

GLOSSARY

|        |  |
|--------|--|
| AAF    | Army Air Forces                                    |
| AG     | Air Adjutant General                               |
| AC/As  | Assistant Chief of Air Staff                       |
| AS/As  | Assistant Chief of Staff                           |
| AMC    | Management Control                                 |
| ADL    | Historical Division, AC/As, Intelligence           |
| ADMH   | Historical Division, Administrative History Branch |
| ADM    | Adjutant General                                   |
| AS/As  | Assistant Director of War                          |
| AC     | Adviser to Advisor, Territories                    |
| ACD    | Adjutant Officer, Air Department                   |
| CAC    | Civil Aeronautics Administration (or Authority)    |
| C/AC   | Chief of the Air Corps                             |
| C/AS   | Chief of Air Staff                                 |
| C/S    | Chief of Staff                                     |
| CC/As  | Deputy Chief of Staff                              |
| CG     | General Headquarters                               |
| CD     | Control, Maintenance, and Distribution             |
| ACSI   | Technical Advisor, Committee for Aeronautic        |
| APC    | Aeronautical Production Committee                  |
| OAS    | Office, Assistant Secretary of War                 |
| OAS    | Office, Chief of the Air Corps                     |
| OAS    | Office, Deputy Chief of Staff                      |
| OAS    | Office of Production Management                    |
| OASD   | Office of Scientific Research and Development      |
| OSA    | Office, Under Secretary of War                     |
| OC     | Observation and Control                            |
| SS     | Services of Supply                                 |
| S/As   | Secretary of War                                   |
| USAFMA | U.S. Code Annotated                                |
| U/As   | Under Secretary of War                             |
| WD     | War Plans Division                                 |

REF ID: A6510

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AAFNS-22

N O T E S

Chapter I

1. House, Hearings on Military Establishment Appropriation Bill for 1937, 239-301.
2. Final Report of War Department Special Committee on Army Air Corps July 13, 1932, p. 31; 49 Stat. 1907. The 2,320-plane objective is sometimes referred to as the Wodring program.
3. Those figures were given by Maj. Gen. Oscar Westover, Chief of the Air Corps, on 3 February 1938. (House, Hearings on Military Establishment Appropriation Bill for 1939 [H.R. 9991], 75 Cong., 3 Sess., 413.)
4. \$10,669,736 of this sum was for previous contractual obligations and \$19,126,894 was contractual authorization. (Ibid., 9-10, 23.)
5. The National Guard was allotted 171 of the 2,320 planes. (Ibid., 9-10.) General Craig stated that the number 2,320 should be regarded as "fixed," not
6. Ibid., 9-10, 22, 23. The Air Corps had originally requested \$118,269,053, but the Budget Advisory Committee had reduced this by approximately \$26,000,000.
7. Ibid., 23.
8. Ibid., 436.
9. He emphasized that until 1937 the Air Corps had been allowed 100 per cent spare engines and that the Navy still was getting that equivalent. (Ibid., 420-21, 448-50.)
10. H. Rept. No. 1990, 75 Cong., 3 Sess., 14. Appropriations for Air Corps equipment procurements by other arms brought the Air Corps total to about \$124,000,000, or 23 per cent of the budget. (Ibid., 13.)
11. Ltr. Louis Johnson to Royal S. Copeland, 31 Mar 33, in Senate, Hearings on H.R. 9995, 75 Cong., 3 Sess., 3; S. Rept. No. 1565, 75 Cong., 3 Sess.
12. Public No. 590, 11 Jun 33; 52 Stat. 655.
13. Memo for C/S by AC/S, WPD, 18 Nov 33, in Lyon Project Records, Bk 1, 10,000 Airplane Program. These records were kept by Col. A.J. Lyon, Technical Executive of the Material Division, and are now on file in AC/AS, WPS.

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14. Attachment to memo cited in n. 13. All but 665 of the 3,720 training planes were to be in active service, while 220 of the 650 miscellaneous aircraft were to be held in reserve.
  15. Incl to memo for Chief, Materiel Div by C/AC, 29 Nov 58, in file cited in n. 13.
  16. Memo for C/S by C/AC, 23 Nov 58, in same file.
  17. Such influence was shown by the outcome of the Munich conference in September 1938.
  18. Cong. Rec., 76 Cong., 1 Sess., 213; H. Doc. No. 105, 76 Cong., 1 Sess.
  19. Ibid. The President stated: "Leaving off all hysteria, this program is but the minimum of requirements." (Cong. Rec., 76 Cong., 1 Sess., 219.)
  20. See Portland Oregonian, New Orleans Times-Picayune, New York Times, Cleveland Plain Dealer, and Atlanta Constitution, all of 13 Jan 59.
  21. Memo for C/S by C/AC, 13 Jan 59, in AG 321.9 Bulk, General Arnold's Book. The sum of \$3,000,000 would be applied to research and \$3,000,000 to bomb procurement and bomb storage. The term "miscellaneous" included principally liaison and photographic aircraft. It was, however, soon discontinued and the planes were specifically enumerated.
  22. App. 1 to General Arnold's Book. The remaining 2,043 planes necessary to make 5,500 were on hand or provided for by 1959 and 1960 funds.
  23. R&R, Plans Sec to C/AC, 21 Jan 59, in Plans Div files, AGHQ. The following day an identical bill, S. 342, was introduced into the Senate.
  24. S/7 to chairman of House and Senate military affairs committees, 3 Feb 59, in AG 032 K, Legislation. The communication noted that time had not permitted submission of the letter to the Bureau of the Budget, so it "does not involve any commitment as to the exact relationship of the legislation to the program of the President."
  25. House, Hearings on a Adequate National Defense, 76 Cong., 1 Sess.
  26. For a discussion of the training and personnel features, see AAF Historical Studies: No. 7 (Revised), Legislation Relating to the Army Air Forces Training Program, 1939 to 1945, and AAF Historical Studies: No. 16 (Revised), Legislation Relating to the AAF Personnel Program, 1939-1945.
  27. H. Rept. No. 32, 76 Cong., 1 Sess.

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37. Wing., 70 Corp., 1 Corps., 1938.
38. Ibid., 1938-81, 1938-81.
39. Ibid., 1938, 1938-81.
40. Ibid., 1938, 1938-81.
41. Ibid., 1938.
42. Corps., 1938-81, 70 Corp., 1 Corps., 1938. This was 1938-81. Major [redacted] of the Air Corps is sent back by [redacted] as of 11 January 1939 from the Chief of the Air Corps to the Chief of the Material Division, specifying that the plans for the cost of 200,000,000 had been submitted and the plans for the execution of the 10,000-1 program should be kept to the Air Corps. (Upon project records, 1938, 3,000 airplane contracts.)
43. S. Corp., 1938-81, 70 Corp., 1 Corps.
44. Corps., 70 Corp., 1 Corps., 1938-81, 203. It was emphasized that the examinations were purely defensive.
45. Ibid., 1938-81. It should be recalled that the original contract will cover for 1,000 planes.
46. Ibid., 1938-81.
47. A. Corp., 1938, 70 Corp., 1 Corps.; 2d strg. 1938-81. Another 2nd strg b. W. General planning to submit information on aircraft procurement part of the budget. (See Chap. III, this study.)
48. Gen. George C. Marshall, "Memorandum for," in New Orleans, LA, no. 11 (Jan. 16 '38), 1938. This was delivered at an address before the Louisiana Association of the 11th and 12th (February, 1938) on 1 February 1938.
49. Lt., Commandant Chancery of the Office of the Vice to Senator Warren G. Fairbank (Mass.), 1938, in Beng., 70 Corp., 1 Corps., 1938.
50. Ibid., Acquisition of aircraft establishment - acquisition bill for 1939, 70 Corp., 1 Corps., 1938.
51. Ibid., 11, 203.
52. Ibid., 203.
53. Ibid., 203.
54. Ibid., 203.

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15. The remainder of the \$50,000,000 was to be used for Signal Corps and Ordnance items. (Ibid.; Joint Res. No. 112, 76 Cong., 1 sess., 7.)
16. Ibid., 7-3.
17. Ibid..
18. Ibid..
19. Joint Res., 76 Cong., 1 sess., 21-5-53.
20. Ibid., 2224, 25/3.
21. S. Exec. Res. 51d, 76 Cong., 1 sess.
22. Senate, Reprint on the War Department Appropriation Bill for 1940 (Joint Res. 3731, 76 Cong., 1 sess., 2.)
23. Ibid., 20.
24. Ibid., 25.
25. Joint contracts were to exceed only three days later, 20 May 1939. (Ibid., 20.)
26. Ibid., 40, 50, 54.
27. Ibid., 51, 53.
28. Ibid., 52.
29. Joint Res., 76 Cong., 1 sess., 7046; S. Exec. Res. 523, 76 Cong., 1 sess., 10, 1.
30. Ibid., 7.
31. Cong. Rec., 76 Cong., 1 sess., 76-9-70.
32. Ibid., 7-1, 77-2-2.
33. Ibid., 512; S. Exec. Res. 50, 76 Cong., 1 sess.; Joint Res. 932.
34. Obviously, the Air Corps itself did not receive \$500,000,000. Large sums went to other arms, such as Signal, Ordnance, and Engineers, for the fulfillment of their portion of this program. An emergency supplemental appropriation for 1940 contained no funds for the material considered herein.

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66. Proclamation 2662, 3 Sep 38, in Federal Register, 9 Sep 39.
68. For discussion on neutrality as such, see Chap. V, this study.
70. Memo for Col. L... Lowmyer by Lt. Col. G.C. Warren, Fiscal Officer, CGC, 16 Aug 39, in AFM 3-22, notes.
71. Ibid.; memo for J. Donald Arnold by Brig. Gen. D.H. Brett, 12 Sep 38, in AFM 3-22, notes. FY 1941, AFM 3-22. Part of this increase in cost and resulting deficiency was caused by the purchase of faster pursuit models than had originally been anticipated.
72. AFM 3-22, incl to memo for Col. L... Lowmyer or Lt. Col. G.C. Warren, 16 Aug 39, in same file.
73. Ibid.
74. Memo for C/S, G-4, by C/C, 6 Sep 39, in AFM 3-22, notes. FY 1940.
76. 1st ind (to above note), G/S, G-4 to C/S, 11 Sep 39; memo for C/C, by C/C, 17 Oct 39, in same file.
78. Memo for C/S by C/C, 18 Sep 39, in same file.
77. Com. Rec., 70 Cong., 2 Sess., 317.
78. Farquhar was head of the commission to coordinate foreign and domestic airplane purchasing.
79. Com. Rec., 70 Cong., 2 Sess., App. 600.
80. "Can Our Plan Protect America?" in This Week, 18 Feb 40, quoted by Sen. Walter Morris (D-Cal.) in Com. Rec., 70 Cong., 2 Sess., App. 600-66. Burns also stressed the importance of additional funds for research.
81. W. L. Lewis, CGC to C/C, 31 Jan 40, in AFM 3-22, notes. Testimony was read for the Air Corps. This testimony was given in executive session and does not appear in the hearings.
82. Report, Hearings on Military Establishments Appropriation Bill for 1941 [redacted] 76 Cong., 2 Sess., 71. For the Air Corps there were also carried under other appropriations \$1,537,062 for Ordnance equipment, \$2,745,179 for radio and related signal equipment, and \$333,244 for transportation of supplies. A mistake of \$3,000,000 exists in the record of total.
83. Ibid., 174-75.

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84. General Arnold affirmed that it would be possible for a foreign purchaser to pay the delivery in an effort to get prior delivery, but he thought it was too early to tell the effect of foreign purchases on domestic deliveries because quantity deliveries were not scheduled until the latter part of spring. Earlier deliveries to foreign powers were theoretically precluded, however, by the No. 1 priority given to the Army and Navy. (Ibid., 476-77.)
85. Ibid., 103.
86. Ibid., 437.
87. Ibid., 616.
88. Ibid., 517-51.
89. L. Act. No. 1912, 76 Cong., 3 Sess., 3.
90. Ibid., 19.
91. Ibid., 20.
92. Ibid..
93. Ibid., 40.
94. Com. Rec., 70 Cong., 3 Sess., 3883.
95. Ibid., 4055.
96. Memo for L.D. by A.D.C. Iller, 8 Apr 40, in Plans Div file 121.2, Initiatives in 1941.
97. Message from L. D. to C. of Secy. No. 751, 76 Cong., 3 Sess.; Com. Rec., 7 - 3 Sess., 6240.
98. Ibid., 6244.
99. Ibid.. A few days prior to this speech President Roosevelt had called on the Secretary of War to obtain a "substantial increase in heavy bomber production." The communication stated that the effective defense of the United States required this. "To this end will you take whatever action is needed, including the procurement of aircraft, to obtain substantially the production rate which I am indicating to you in a private memorandum." (Washington Post, 6 May 1940.) The report stated that this would mean a large expansion of plant facilities and utilization of existing factories not then engaged in wartime manufacture. One "informed source" declared the most important element in the President's request lay in the fact that it was not "merely a call for a light addition to the present program, but rather that it is a cut lifting the aim to an entirely new objective."

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100. Portland Oregonian and Denver Post, 10 May 40. See also, St. Louis Post-Dispatch, Des Moines Register, and Philadelphia Record, 16 May 40; Chicago Daily Tribune and Atlanta Constitution, 17 May 40.
101. Memo for C/S by C/AS, 17 May 40, in AG 452.1-325, sale . . . Abroad.
102. Senate, Hearings on H.R. 9209, 76 Cong., 3 Sess., 373.
103. Only 200 of the 2,400 planes were of the combat type. (Ibid., 5.)
104. Ibid., 373; S. Rept. No. 1630, 76 Cong., 3 Sess., 3.
105. Cong. Rec., 76 Cong., 3 Sess., 6503.
106. Ibid., 6503-05. General Arnold had testified that the expected peak by December 1940 was 1,248 planes per month. (Senate, Hearings on H.R. 9209, 76 Cong., 3 Sess., 93.)
107. Cong. Rec., 76 Cong., 3 Sess., 6617.
108. 54 Stat. 350.
109. Cong. Rec., 76 Cong., 3 Sess., 6356. This measure and its Senate companion, S. 4025, were prepared by the War Department.
110. Cong. Rec., 76 Cong., 3 Sess., 6468.
111. Ibid., 6579. So that this shifting will not appear insane, it should be noted that changes were made in some of the other provisions of these bills.
112. H. Rept. No. 2261 and S. Rept. No. 1649, 76 Cong., 3 Sess.
113. Ltr, S/W H.H. Woodring to Sen. Morris Sheppard, 20 May 40, in S. Rept. No. 1649, 76 Cong., 3 Sess.
114. Cong. Rec., 76 Cong., 3 Sess., 6862. Though the bill differed somewhat from previous recommendations the changes were acceptable to, and favored by, the War Department. This bill was similar to H.R. 9822, which was originally applicable to the Navy only but was amended to apply to the Army. (Ltr, Acting S/I Louis Johnson to Director of Bureau of Budget, 27 Jun 40, in AG 381, National Defense (6-26-40). For provisions of H.R. 9822 (Public No. 671), see Chap. III, this study.)
115. Public No. 703, 2 Jul 40; 54 Stat. 712. For other provisions, see below.
116. Testimony of General Marshall on 4 Jun 40, in House, Hearings on Supplemental National Defense Appropriation for 1941 (H.R. 10022), 76 Cong., 3 Sess., 3.

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117. Cong. Rec., 76 Cong., 3 sess., 7282; S. Doc. No. 75, 76 Cong., 3 Sess.
118. H. Rept. No. 2497, 76 Cong., 3 sess., 2.
119. Cong. Rec., 76 Cong., 3 Sess., 8079; S. Doc. No. 245, 76 Cong., 3 Sess.; S. Rept. No. 1880, 76 Cong., 3 sess., 3.
120. Public No. 667, 26 Jun 40; 54 Stat. 602. It was expected that 3,000 planes would be procured with this sum but higher costs and the substitution of some combat for training planes reduced this number to 2,181. (House, Hearings on the Second Supplemental National Defense Appropriation Bill for 1941 /H.R. 10263/, 130-31.) Practically the only congressional controversy on this bill concerned the appropriation for research facilities. (See Chap. IV, this study.)
121. Cong. Rec., 76 Cong., 3 sess., 8350; S.J. Res. 278, 76 Cong., 3 sess. This authority was to be granted under 50 U.S. Code Annotated 80, which dealt with procurement by the Executive during war or the imminence of war.
122. Ltr, Henry L. Stimson to A.J. May, 7 Oct 40, in Al. 032 H, Legislation. The President's authority also extended to the Navy until 15 May 1941 by Public No. 783, 76 Cong., 3 Sess.
123. Cong. Rec., 76 Cong., 3 sess., 9433-34; H. Doc. No. 674, 76 Cong., 3 sess.
124. House, Hearings on H.R. 10263, 154-55.
125. H. Rept. No. 2510, 76 Cong., 3 Sess.; Cong. Rec., 76 Cong., 3 sess., 9745. During the hearings General Brett pointed out that the awarding of contracts had been delayed by certain congressional action. He said he was ready to buy 4,000 planes but that industry would not sign contracts until it knew the effects of the possible repeal of the Vinson-Trammell Act. (House, Hearings on H.R. 10263, 76 Cong., 3 sess., 252. See Chap. III, this study.)
126. Ibid., 89-91. William S. Knudsen, of the National Defense Commission, had indicated that the aircraft industry could meet the demands of the new procurement, and that the expanded British procurement would not interfere with deliveries to the U.S. Army and Navy. (Cong. Rec., 76 Cong., 3 sess., 9752.)
127. S. Rept. No. 2014, 76 Cong., 3 Sess.
128. Cong. Rec., 76 Cong., 3 sess., 12115; Public No. 781, 9 Sep 40; 54 Stat. 872.
129. House, Hearings on Third Supplemental National Defense Appropriation Bill for 1941 /H.R. 10572/, 76 Cong., 3 Sess., 94. The \$608,000,000 did not include the second supplemental appropriation for 1941. Of the total appropriation of \$1,293,000,000 for aircraft procurement, \$393,000,000 had been obligated. (Ibid., 97.)

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130. Public Ac. 60, 6 Oct 40; C/SAC, DDC.
131. Ac. for 134, by C/AC, in SAC 430.1-17C, manufacture of Airplanes.
132. Noted in Com. Sec., 76 Cong., 3 sess., Apr. 22-29. Somewhat indicative of the confusion and fluctuation which followed, excerpts from a material division document: "The 1600 program is really 2000. . . . the 3000 program is really 2181. . . . The 1,000 program which formerly did not include the 2181 program, now includes the 2181 but the 1800 has been reduced to 1187. The 1812 figure obtained by subtracting 51.1 from 1,000 is now 1184. . . . Therefore the grand total of 20,000 has become 18,000. Check it!" (Summary of Air Corps Programs, n.d., in Lyon Project Records, no. 29, 66,000 program.) The note had as its stated purpose: by avoidance of confusion within the numbers of the various Air Corps programs.
133. Authorized procure as reserves, aerial planning sec., Materiel Div, 11 Jul 40, in Lyon Project Records, no. 33, amount of procurement requirement, and all Air Corps programs. Actually, the procurement of 20,000 was authorized, but because of lack of facilities, the purchase of 1,120 of them was deferred.
134. Ac. for statistician e.c., ODCS [over] Maj. J.W. Brown, Technical Sec, Materiel Div, n.d., in Lyon Project Records, no. 42-a, 1st for man, Chief of C/SACP.
135. Ac. for 34, b/c/s, 20 Dec 40; and a for 4/1, by Maj. Gen. C.F. Street, 24 Jun 41, both in SAC 430.1-17C, manufacture of Airplanes. It should be noted that the 20,500-ton procurement over and above the 5,000-ton program and the 2,000 planes provided for prior to the 4/1 limitations order of 30 June 1940.
136. Ac. for C/AC by Brig Gen. Carl Spaatz, Chief, Materiel Div, 25 Oct 40, in SAC 430.1-17C, allotment.
137. Public Ac. 160, 77 Cong., 1 sess., 161; h. foot. no. 201, 77 Cong., 1 sess., 1, 15. The Air Corps sums were exactly as required by law. Part of this fund, on a \$,000-plus per program, were for plant construction. (See Chap. II, this study.)
138. Ac. acpt. no. 160, 77 Cong., 1 sess.; Conj. Sec., 77 Cong., 1 sess., 2710.
139. Public Ac. 24, 2 Apr 41; C/SAC, DDC.
140. Ac. for 3/ by C/S, 20 Apr 41, in Lyon Project Records, no. 32, the acpt. 12,000 Airplane Program.
141. Ibid. The cost of the 12,000 planes was cost \$,000,000,000. They could not and be transferred without special authority because one hundred less than 11,000 to \$1,000,000,000 in transfer of articles previously provided for.

142. Memo for Actg DS/S for Air General Arnold by Brig. Gen. O.P. Echols, 13 Mar 41, in same file.
143. Memo for C/S, 21 Mar 41, ibid.
144. Memo for C/S by S/I, 28 Mar 41, ibid.
145. \$1,201,951,973 of the cash was to pay prior contract obligations.
146. The remaining cash was for general operation and maintenance. Also provided was \$45,035,000 for barrage balloons and accessory equipment. House, Hearings on Military Establishment Appropriation Bill for 1942 H.R. 4965, 77 Cong., 1 Sess., 17, 466.
147. Ibid., 752; H. Doc. No. 225, 77 Cong., 1 Sess.
148. House, Hearings on H.R. 4965, 758.
149. Cong. Rec., 77 Cong., 1 Sess., 4801; H. Rept. No. 741, 77 Cong., 1 Sess. Representative Francis Case (S.D.) believed the measure would provide the United States with a "big stick" so that she could "speak to the nations at war and ask them to stop this madness." (Cong. Rec., 77 Cong., 1 Sess., 4820.)
150. Senate, Hearings on H.R. 4965, 77 Cong., 1 Sess., 6-7.
151. Ibid., 44.
152. Ibid., 13-19.
153. Cong. Rec., 77 Cong., 1 Sess., 5815; Public No. 139, 30 Jun 41; 55 Stat. 366.
154. It should be pointed out that the Air Corps had the privilege of shifting funds from one item to another in case it discovered that estimates had been excessive for one project and too low for another.
155. See above, p. 28.
156. This law placed the Air Corps plane strength at 6,000 and is still the "permanent" congressionally authorized number of aircraft. (or contract provisions of the act, see below, Chap. III.)
157. Cong. Rec., 77 Cong., 1 Sess., 3251; H. Rept. No. 559, 77 Cong., 1 Sess.
158. Memo for US/W by Col. W.F. Volandt, 28 May 41, in 400.12 H, Procurement Methods and Programs.
159. 1st ind (to above memo), Maj. F.W. Bullock to C/S; Cong. Rec., 77 Cong., 1 Sess., 6190.
160. Cong. Rec., 77 Cong., 2 Sess., 3741; S. Rept. No. 1235, 77 Cong., 2 Sess.

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161. Cong. Rec., 77 Cong., 2 Sess., 5217.
162. Ibid., 6293.
163. H. Rept. No. 983, 77 Cong., 1 Sess., 15; charts in Budget and Fiscal, Part; House, Hearings on H.R. 5412, 77 Cong., 1 Sess., 3; Cong. Rec., 77 Cong., 1 Sess., 15 Sep 41; Public No. 247, 25 Aug 41; 55 Stat. 670.
164. House, Hearings on H.R. 6159, Pt 2, 77 Cong., 1 sess., 122-23.
165. Ibid., 123. The Air Corps had originally estimated the costs of current procurement programs at \$5,080,000,000 instead of the required \$5,412,004,421. (Ibid., 125.)
166. Ibid., 127; H. Rept. No. 1470, 77 Cong., 1 Sess.
167. S. Rept. No. 394, 77 Cong., 1 Sess. The increase of \$390,000,000 for Air Corps construction was chargeable to the Quartermaster Corps and not to the air arm.
168. Cong. Rec., 77 Cong., 1 Sess., 9721, 9724.
169. Ibid., 9811, 10100; Public No. 353, 17 Dec 41.
170. Cong. Rec., 77 Cong., 2 Sess., 33-34; H. Doc. No. 501, 77 Cong., 1 Sess. The President also called for the production of 45,000 tanks in 1942 and 75,000 in 1943 as well as 8,000,000 and 10,000,000 dead-weight tons of shipping in 1942 and 1943, respectively. This program would require \$56,000,000,000 for the coming fiscal year.
171. House, Hearings on Fourth Supplemental National Defense Appropriation for 1942 /H.R. 5421, 77 Cong., 2 Sess., 2-3. The transfer of lend-lease materials to the value of \$4,000,000,000 was included.
172. Ibid., 3-5.
173. Ibid., 12. The report of the Truman committee was criticized because virtually no information had been requested directly from the Air Corps.
174. Ibid., 5.
175. H. Rept. No. 1059, 77 Cong., 2 Sess.
176. Cong. Rec., 77 Cong., 2 Sess., 590-612, 693, 767, 911; S. Rept. No. 994, 77 Cong., 2 Sess.; Public No. 422, 30 Jan 42.
177. House, Hearings on Fifth Supplemental National Defense Appropriation for 1942 /H.R. 5421, 77 Cong., 2 Sess., 72; H. Rept. No. 1750, 77 Cong., 2 Sess., 5. No aircraft materiel was included in the more than five-billion lend-lease appropriation.

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178. Chart. in Budget and Fiscal, AF; Senate, Hearings on H.R. Bill, 77 Cong., 2 Sess., 7.
179. Cong. Rec., 77 Cong., 2 Sess., 2031; Public No. 474, 5 Mar 42. The House agreed to Senate amendments making the total appropriation \$30,412,737,900.
180. Cong. Rec., 77 Cong., 2 Sess., 1679-80.
181. House, Hearings on H.R. 6863, Pt 2, 77 Cong., 2 Sess., 4, 40.
182. Ibid., 40-41. Funds for 23,550 additional airplanes required to meet the President's program were to be requested in the regular 1943 estimates.
183. Ibid., 104-05.
184. Ibid., 106.
185. H. Rept. No. 1956, 77 Cong., 2 Sess.; S. Rept. No. 1257, 77 Cong., 2 Sess.
186. Public No. 525, 25 Apr 42.
187. Charts in Budget and Fiscal, AF.
188. House, Hearings on Military Establishment Appropriation Bill for 1943 /H.R. 7280/, 77 Cong., 2 Sess., 21.
189. Ibid., 136; H. Rept. No. 2266, 77 Cong., 2 Sess., 4-5.
190. This was composed of members of the Army Air Forces, the U.S. Navy, the Royal Air Force, the British Air Ministry, and the War Production Board.
191. House, Hearings on H.R. 7280, 199.
192. Ibid., 195, 205.
193. H. Rept. No. 2266, 77 Cong., 2 Sess., 14; S. Rept. No. 1527, 77 Cong., 2 Sess.; Cong. Rec., 77 Cong., 2 Sess., 5990; Public No. 649, 2 Jul 42; 56 Stat. 611.
194. Estimates for Fiscal Year 1944, 19 Feb 43, in AF 111.3, Estimates, Bulk. The cost of the trainers was \$307,259,250.
195. House, Hearings on Military Establishment Appropriation Bill for 1944 /H.R. 2996/, 78 Cong., 1 Sess., 2. The exact number of planes was 99,740. (Senate, Hearings on H.R. 2996, 78 Cong., 1 Sess., 7.)

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Chapter II

1. 52 Stat. 707.
2. Ibid.
3. Army Ordnance, XX, No. 117 (Nov-Dec 38) 171.
4. Public No. 723, 25 Jun 38; 52 Stat. 1153.
5. Cong. Rec., 76 Cong., 1 Sess., 35.
6. Ibid., 471.
7. 1st ind (memo for Chief, Materiel Div by Col H.W. Harms, Supply Div), Brig. Gen. A.W. Robins to C/AC, 25 Jan 39, in AAG 032 K, Legislation.
8. R&R, Plans Sec to C/AC, 1 Feb 39, in Plans Div files, AFSHO.
9. This amount, with the previously appropriated \$2,000,000, would accomplish the enlarged program. The President in his message to Congress on 12 January 1939 had suggested "approximately \$32,000,000" for educational orders. (Cong. Rec., 76 Cong., 1 Sess., 248.)
10. Ltr, Harry H. Woodring to Morris Sheppard, 24 Jan 39, in Senate, Hearings on H.R. 3791, 76 Cong., 1 Sess., 255-56.
11. 46 Stat. 1494 (amended by 49 Stat. 1011); 49 Stat. 2036; 48 Stat. 948. In reply to a letter of 10 February 1939 from the Assistant Secretary of War the Acting Secretary of the Interior stated that his office had reached the conclusion that an educational order was not a "public work" as contemplated by the Bacon-Davis Act, and therefore neither the act nor the joint regulations by the Secretary of the Interior and the Secretary of the Treasury were applicable to such orders. (Ltr, E.K. Burlew to S/W, 15 Feb 39, in AAG 400.13 Special, Educational Orders.)
12. Senate, Hearings on H.R. 3791, 76 Cong., 1 Sess., 322-23.
13. S. Rept. No. 86, 76 Cong., 1 Sess., 13.
14. Public No. 18, 3 Apr 39; 53 Stat. 560. The \$34,500,000 included the \$2,000,000 previously appropriated for 1939.
15. Public No. 44, 26 Apr 39; 53 Stat. 595. This sum, as well as the earlier \$2,000,000, was to be diverted from other funds.
16. H. Rept. No. 823, 76 Cong., 1 Sess.; Public No. 161, 1 Jul 39; 53 Stat. 995.

196. The planes were to cost \$13,665,725,361, while the spares would increase this by \$335,117,009. (House, Hearings on H.R. 296, 1/3.)
197. Ibid., 120.
198. Ibid.
199. Ibid., 60.
200. H. Rept. No. 566, 78 Cong., 1 Sess.; S. Rept. 107, 73 Cong., 1 Sess.; Daily Cong. Rec., 73 Cong., 1 Sess., 6575; Public No. 103, 1 Jul 43. Appropriations for Air Corps items chargeable to other branches from 1940 to 1944, inclusive, were: \$117,707,369; \$1,293,-522,915; \$7,295,480,393; \$5,343,913,155; and \$12,686,054,562--a total of \$26,741,678,419. (House, Hearings on H.R. 296, 78 Cong., 1 Sess., 123.)
201. The original estimate for fiscal year 1944 called for 99,740 airplanes to be accepted up to June 1945; this figure was later lowered to 76,456, not, as might have been the case in earlier years, because it was impossible to procure the larger number, but because the smaller number would suffice. (Memo for Maj. Gen. O.P. Echols and others by Maj. Oliver May, 23 Feb 44, in AAG 111.B, Estimates for Appropriations.)
202. H.R. 4967, 78 Cong., 2 Sess., 28.
203. The total appropriation for the military establishment was \$49,349,023,700, of which amount \$15,676,652,700 represented new funds and \$33,672,871,000 a reappropriation of funds expected to remain unobligated as of 30 Jun 1944. In fiscal year 1944, \$74,211,249,961 had been made available, and in the fiscal year 1943, \$74,930,515,793. (House, Hearings on Military Establishment Appropriation Bill for 1945 [H.R. 4967], 78 Cong., 2 Sess., 3.)
204. The following table gives a breakdown of these savings:

|   |                      |
|---|----------------------|
| Reduction in requirements .....   | \$1,000,000,000      |
| Reduction in prices from original estimates..                           | 3,000,000,000        |
| Reduction in fixed-price contracts .....                                | 300,000,000          |
| Reduction in cost-plus-fixed-fee contracts...                           | 1,500,000,000        |
| Reduction in obligations due to terminations<br>and cancellations ..... | <u>2,700,000,000</u> |
| Total estimated surplus to 30 June 1944 .....                           | 9,000,000,000        |
| Estimated recovery of former years' funds in<br>fiscal year 1945 .....  | 2,000,000,000        |
| TOTAL estimated surplus .....   | 11,000,000,000       |

(Ibid., 28.)

205. The original estimate for fiscal year 1945 called for 100,345 aircraft; this figure was later reduced to 77,174 airplanes and 5,000 gliders. (Memo for General Echols and others from Major May, 23 Feb 44, and unsigned memo of 20 Jan 45, both in AAG 111, Estimates for Appropriations. House, Hearings on H.R. 4967, 78 Cong., 2 Sess., 296.)

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206. Ibid., 297.
207. Ibid., 319.
208. Ibid., 295, 321. Ninety million of the \$8,949,565,925 was for gliders.
209. Ibid., 296.
210. Public No. 374, 78 Cong., 12; House, Hearings on Military Establishment Appropriation Bill for 1945 [H.R. 4967], 78 Cong., 2 Sess., 3, 279, 386, 446-9; Senate, Hearings on Military Establishment Appropriation Bill for 1945 [H.R. 4967], 78 Cong., 2 Sess., 12.
211. Public No. 126, 79 Cong., 1 Sess., 12.
212. House, Hearings on Military Establishment Appropriation Bill for 1946 [H.R. 3550], 79 Cong., 1 Sess., 176.
213. Senate, Hearings on Military Establishment Appropriation Bill for 1946 [H.R. 3550], 67-68. This sum included \$300,000,000 for new functions and activities transferred to the AAF from the Signal Corps, the Corps of Engineers, and the Transportation Corps. (Ibid., 67); House, Hearings on Military Establishment Appropriation Bill for 1946 [H.R. 3550], 176.
214. House, Hearings on Military Establishment Appropriation Bill for 1946 [H.R. 3550], 176. The following table gives a breakdown of AAF requirements for fiscal year 1946:

|                                 |                   |
|---------------------------------|-------------------|
| Equipment.....                  | \$3,700,000,000   |
| Supplies .....                  | 1,100,000,000     |
| Personnel.....                  | 645,000,000       |
| Contractual services .....      | 400,000,000       |
| Travel and transportation ..... | <u>67,000,000</u> |

TOTAL ..... \$5,912,000,000

(Ibid., 177.)

215. Ibid., 190. This figure is to be compared with something over eight billions in 1945 and fourteen and one-half billions in 1944. The number of airplanes to be procured is not given here because production schedules were changed so frequently that it would be almost impossible to determine which figure should be used.
216. Tab A to weekly activity reports of AFDIC for 4 Nov and 9 Dec 43, 8 Apr and 6 May 44; Tab A to memos for C/AS by AFDIC, 6 and 13 Nov 43, in AFHQ files. Items 9 to 12 inclusive are from daily activity reports of AFDIC for 1, 3, 13 May, 10 Jun, 17 Jul, 16 Sep, 6 Dec 44, and 9 Mar 45. Item 13 was taken from Statistical Control Aircraft Inventory.

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32. Memo for OBW by Col. W.F. Volandt, 29 Mar 41, ibid.
33. Memo for Donald Nelson, Advisory Commission to the Council of National Defence by Robert P. Patterson, 9 Apr 41, ibid.
34. Memo for C/IC by Maj. G.K. Heiss, Fiscal Off, Ordnance Dept, 23 May 41, ibid.
35. Memo for AS/I by Lt. Col. L.W. Miller, Chief, Fiscal Div, 2 June 41, ibid.
36. Memo for US/I by Lt. Col. A.W. Martenstein, Fiscal Off, OMC, 8 Jan 42, ibid.
37. Memo for AS/I by C/AC, 27 Apr 40, in AAG 452.1-3295 H, Sale . . . Abroad.
38. Notes on Productive Capacity of Aircraft Industry by Maj. A.J. Lyon, 29 Apr 40, in Lyon Project Records, No. 22, Capacity of the Aircraft Industry.
39. Memo for Asst C/AC by Chief, Plans Div, 9 May 40, in Plans Div files.
40. Notes for Asst C/AC by Maj. A.J. Lyon, 18 May 40, in Lyon Project Records, No. 34, Productive Capacity and Delivery Schedules.
41. Washington Daily News, 28 May 40, quoted in Cong. Rec., 76 Cong., 3 Sess., App. 3301.
42. Memo for George C. Head, Chief, Aeronautical Sec, Advisory Commission to the Council of National Defense by General Arnold, 26 Jun 40, in Lyon Project Records, No. 48, Government-Owned Factories.
43. 54 Stat. 603, 874; Senate, Hearings on H.R. 10055, 76 Cong., 3 Sess., 4, 86-89; House, Hearings on H.R. 10263, 76 Cong., 3 Sess., 156. Of the \$93,400,000 allotted to the Air Corps from H.R. 10055, none had been released by the President on 19 September 1940. (Ltr, Gen. Brett to Asst Chief, Materiel Div, 19 Sep 40, in AAG 112.41, Allotments.)
44. House, Hearings on H.R. 10572, 76 Cong., 3 Sess., 94, 100-01; H. Rept. No. 2983, 76 Cong., 3 Sess., 5; Cong. Rec., 76 Cong., 3 Sess., 12700-12701; 54 Stat. 965.
45. Memo for Dir of the Budget by AS/W, 12 Sep 40, in Lyon Project Records, No. 48, Government-Owned Factories.
46. Notes on conference between Knudsen and Gen. Arnold, 19 Oct 40, in same file.
47. Ltr, William S. Knudsen to Gen. Arnold, 8 Nov 40; and memo for Gen. Brett by Gen. Arnold, 9 Nov 40, both ibid.

48. The British wanted more bomber production also but were unwilling to put more money into an increase of facilities. If both British and American demands were to be met, the only possibility lay in the creation of new facilities. (Memo for S/W by C/AC, 28 Oct 40, in AAG 452.1-17G, Manufacture of Airplanes.)
49. Memo for the President by Robert P. Patterson, 16 Nov 40, in Lyon Project Records, No. 48, Government-Owned Factories. On 15 October 1940 the Automobile and Truck Manufacturers had adopted a resolution "offering automotive industry facilities for mass production of standardized airplane body parts." (Copy in same file.) The utilization of these facilities--with subsequent complete conversion of many--was a vital factor in attaining the Air Corps goal.
50. Lyon Project Records, No. 48. This book contains a clear story on the government-owned factories.
51. Memo for Dir. of Bureau of the Budget by Robert P. Patterson, 6 Dec 40, in Lyon Project Records, No. 42-B, Miscellaneous Memoranda for the Assistant Secretary of War.
52. House, Hearings on H.R. 4124, 77 Cong., 1 Sess., 172.
53. H. Rept. No 301, 77 Cong., 1 Sess., 4, 6.
54. House, Hearings on H.R. 4124, 77 Cong., 1 Sess., 24, By the beginning of 1941 the Air Department had allowed the Air Corps \$257,480,000 of the \$916,275,000 appropriated for expediting production. (Memo for C/S by Maj Gen J.H. Burns, 6 Jan 41, in AAG 112.4A, Allotments.)
55. Memo for Maj B.E. Vaughan, Price Administration Br, SOS by Lt Col C.H. Dyson, Budget Off, Materiel Comd, 23 Dec 42, in AAG 004, Commercial Enterprises . . . Projects. There were also 12 modification centers which were government-owned and privately operated. There were no government-owned and government-operated plants, nor privately owned and government-operated plants.
56. Public No. 139, 30 Jun 41; 55 Stat. 366.
57. House, Hearings on H.R. 6159, 77 Cong., 1 Sess., 83, 87; Public No. 353, 17 Dec 41; 55 Stat. 810.
58. House, Hearings on H.R. 6448, 77 Cong., 2 Sess., 35, 53; Public No. 422, 30 Jan 42.
59. Public No. 474, 5 Mar 42.
60. House, Hearings on H.R. 2996, 78 Cong., 1 Sess., 9, 552. The total requested for the OS/W was \$1,314,147,000, but \$565,147,000 was carried over from the previous year.

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61. W. Post, p. 500, 70 Oct., 1 Sec., S, E.
62. ~~Refile 10.108, 1 Jul 13; 57 std, 547.~~
63. ~~Re file subject and file 1, 117 b orig. Sec. . Hopkins, Calif, Resources Div, 9/13, 11D, 11 sec 11, in 1 S 112.4, Defense Aid Funds.~~

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CHAPTER III

1. Ltr, Dr. . . covering to Mr. T. R. Mill, Chairman, Board of Inquiry on  
B-52 Crash, 11 Jul 57, in file 4221-15, "Incase of Airplanes".
2. Ltr, Dr. . . to C/ G, 2 Aug 57, in same file.
3. Report to Dr. C/IC, 2 Nov 57, in Board project records, no. 1,  
10,000 Airplane program.
4. Confidential, 7 May 58, 1 Dec 58.
5. Confidential, in file 421, 7 May 58.
6. Ltr and (one for Dr. T., original copy by Dr. T., Supply Div),  
Chairman, Board Div to C/IC, 1 Mar 59, in 4221.0 bulk, General  
Arnold's Box.
7. Ltr, Supply Div to C/IC, 17 Feb 59, in Board Div 4221.0, "C.O."
8. Dr. T., Rejection of Inadequate Technical Estimate, Re Conf.,  
1 Dec 58, etc.
9. Ltr Dr. T., Rejection of Estimate, 7 Oct 59, 1 Dec 58, 4221.0.
10. M. Stat. 101; M. Stat. 1001. Scientific equivalent used for communications, broadcast station, navigation, and fire control (the  
last describes light aircraft) were excluded from this limit time.  
The last cited is now in the 4221.0 bulk, General Arnold's Box.  
See 4221, 25 Jun 1958.
11. Ltr Dr. T., Rejection of Estimate, 27 Jul, 1 Dec 58, 1 Dec 58, 4221.0 bulk, General Arnold's Box.
12. Conf. Dr. T., 7 Oct 59, 1 Dec 58, 4221-15, 4221-15, 4221-15, 4221-15.  
In the course of this discussion, Dr. T. brought out that he  
had collected and reviewed many air profiles, but all now has a  
definite source, in the literature or personal knowl.
13. Ltr Dr. T., 10 Nov 59, 1 Dec 58, 4221-15, 4221-15, 4221-15, 4221-15.  
"over Arnolds' Box".
14. Ltr, 4221.0 Div to C/IC, 1 Dec 58; and memo for Dr. C/IC, 1 Dec 58,  
Dr. T., 10 Nov 59 cited above.

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15. Ltr, H.H. Woodring to chairmen of House and Senate military affairs committees, 10 Mar 39, ibid.
16. H. Rept. No. 256, 76 Cong., 1 Sess.
17. Public No. 15, 3 Apr 39, 53 Stat. 560. The profit limitation provision of this bill delayed the placing of contracts for several types of aircraft. (TMA, Chief, Materiel Div to C/AC, 29 Mar 39, in AAG 032 K, Legislation.)
18. Draft in Plans Div files, AFHQO. This was not to be construed as in "any way amending" the Act of 2 July 1926 or as authorizing the open market purchases of airplanes for purposes other than as provided in that act. The bill had been drafted in collaboration with the Chief of the Air Corps and called attention to the fact that the chiefs of Ordnance, Chemical Warfare Service, and Signal Corps already had this authority by 35 Stat. 125 and 49 Stat. 1277.
19. Memo for C/AC by Gen. Brett, 22 Mar 39, in AAG 452.1-13E, Purchase of Airplanes.
20. Cong. Rec., 76 Cong., 1 Sess., 737, 741. This measure did not provide for negotiated contracts for quantity procurement.
21. S. Rept. No. 245, 76 Cong., 1 Sess.; Cong. Rec., 76 Cong., 1 Sess., 4535; H. Rept. No. 841, 76 Cong., 1 Sess.
22. Public No. 168; 53 Stat. 1000.
23. The Air Corps was allowed, by the Act of 2 July 1926, to procure experimental craft on a secret basis, but when it came to quantity procurement of an acceptable plane, competitive bidding was compulsory, thus divulging Air Corps developments.
24. F&R, Col. W.F. Volandt to Plans Div, 13 Feb 40, in AAG 032 L, Legislation.
25. Comment 2, R.R., Plans Div to Exec, 16 Feb 40; and Comment 3, Exec to Materiel Div, 16 Feb 40, both in file cited above.
26. See tab on emergency procurement authority in AAG 321.9, Bulk, General Arnold's Book.
27. Ltr, Louis Johnson to Franklin D. Roosevelt, 10 Jul 39, in AAG 452.1-13F, Purchase of Airplanes.
28. Cong. Rec., 76 Cong., 1 Sess., 8799. The profit limitation clause was included.
29. Ibid., 9460.
30. Ltr, H.H. Woodring to A.J. May, 21 Jul 39, in AAG 032 L, Legislation.

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31. H. Rept. No. 1322, 76 Cong., 1 Sess.
32. Cong. Rec., 76 Cong., 1 Sess., 9787; S. Rept. No. 979, 76 Cong., 1 Sess. Amendments to this bill were the same as those to the House proposal.
33. Cong. Rec., 76 Cong., 1 Sess., 10668, 10538.
34. Ibid., 1019-1320; Public No. 426, 5 Mar 40; 54 Stat. 45.
35. Cong. Rec., 76 Cong., 3 Sess., 714, 4523; 41 U.S.C. 5. Section 3709 set no monetary limit for purchase in the open market when an emergency existed.
36. Cong. Rec., 76 Cong., 3 Sess., 765, 1251, 4060, 7396; H. Rept. No. 1535 and No. 1922, 76 Cong., 3 Sess.
37. Memo for AS/W by Asst C/AC, 10 Apr 40, and memo for Gen. Arnold, unsigd., 4 Mar 40, both in AG 032, Legislation. The latter document cites the memo of the Secretary of War to Representative Coonran.
38. Memo for AS/W by Gen. Arnold, 15 Apr 40, in AG 032, Legislation.
39. Memo for AS/W by C/AC, 18 May 40, in Plans Div file 032, Legislation General.
40. Cong. Rec., 76 Cong., 3 Sess., 6468, 8822-31; H. Rept. No. 2706, 76 Cong., 3 Sess.; 54 Stat. 676. The authority for negotiation of contracts was not extended to the Secretary of War, and the above provisions were to expire on 30 June 1942.
41. Cong. Rec., 76 Cong., 3 Sess., 6579, 6667. S. 4025, a similar bill, was introduced in the Senate on 22 May and was reported the same day. (Ibid., 532; S. Rept. No. 1649, 76 Cong., 3 Sess.)
42. Ibid.
43. Ltr, Louis Johnson, Acting S/W, to Dir of the Bureau of the Budget, 27 Jun 40, in AG 381, National Defense (6-26-40); 54 Stat. 712. The Acting S/W said he was not inimical to the provisions of H.R. 9822.
44. Contracts for less than \$500,000, and not of the cost-plus-a-fixed-fee type, needed only the approval of the chief of the supply arm or service concerned. (Memo for C/AC et al. by Col. J.W. Schulz, 2 Jul 40, in AG 032, Legislation.)
45. American Aviation Daily, X, No. 4 (5 Jul 40), 17.
46. House, Hearings on Second Supplemental National Defense Appropriation for 1941 (H.R. 10263), 76 Cong., 3 Sess., 251-52.

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47. Senate, Kearin's on H.R. 10263, 76 Cong., 3 Sess., 74.
48. Cong. Rec., 76 Cong., 3 Sess., 12115; Public No. 781, 9 Sep 40; 54 Stat. 872.
49. Public 301, 8 Oct 40; 54 Stat. 1003.
50. See above, Chap. I, p. 33, for congressional history of H.R. 4476.
51. Memo for US/1 by Col. W.F. Volandt, Asst to Chief, Materiel Div, 28 May 41, in AG 400.12h, Procurement Methods and Programs.
52. Public No. 139, 30 Jun 41; 55 Stat. 366. S. 1605, introduced on 5 June 1941, provided for the extension to 30 June 1943 of Public No. 426 of 5 March 1940. This measure passed the Senate but died in the House Committee on Military Affairs. (Cong. Rec., 77 Cong., 1 Sess., 4734, 5732.)
53. Ibid., 77 Cong., 2 Sess., 5042. One other item, not directly concerning War Department authority, should be mentioned here. The provision (Section 4) of Public No. 671, 28 June 1940, was not very clear regarding the amortization of facilities furnished by the aircraft industry between the declaration of an emergency on 8 September 1939 and 10 June 1940. This vagueness was a cause of contention (regarding taxation) on the part of Army and Navy aircraft contractors. At the urging of the War and Navy departments certain modifications were made, although 10 June 1940 was retained as the determining date for "emergency facilities." (Public No. 301, 8 Oct 40; 54 Stat. 974. See also AG 032, Legislation.)
54. Cong. Rec., 76 Cong., 3 Sess., 9098.
55. Memo for Plans Div by Col. W.F. Volandt, n.d., and draft ltr to Sen. Morris Sheppard by Plans Div, 8 Aug 40, both in Plans Div file 032, Legislation General.
56. Ltr, Henry L. Stimson to Morris Sheppard, 30 Sep 40, <sup>in</sup> AG 032, Legislation.
57. Other measures in 1941 that did not pass beyond the committee stage were: H.R. 1615 (8 Jan) dealing with design procurement and opposed by the Air Corps; H.R. 1775 (10 Jan); H.R. 4945 (3 Jun); and H.R. 6209 (12 Dec.).
58. Cong. Rec., 77 Cong., 1 Sess., 9828, 9856, 9861, 9863, 9895, 10072, 10100; Public No. 354, 18 Dec 41; 55 Stat. 838. In the Senate H.R. 6233 was substituted for S. 2129 which was also introduced on 15 December 1941. The Second War Powers Act, Public No. 507 of 27 March 1942, contained no provision relative to Army contracts but extended the authority of the Secretary of Navy to negotiate contracts for aircraft and other materiel. (56 Stat. 176.)

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59. Public No. 528, 28 Apr 42; 56 Stat. 226, 244-45. These provisions were also applicable to all subcontracts of \$100,000 or more.
60. Public No. 753, 21 Oct 42; 56 Stat. 798, 982 ff.; Public No. 149, 14 Jul 43.
61. Memo for Gen. Arnold by Capt. E.H. Snodgrass, Patents Sec., 22 Jun 39, in AAG 400.12, Procurement Methods and Programs.
62. Memo for C/AC et al. by Brig. Gen. J.W.N. Schulz, Dir of Purchases and Controls, OASW, 17 Feb 41, in same file.
63. Memo for Asst Chief, Materiel Div by Col. W.F. Volandt, 3 Jan 42, in AAG 400.12, Procurement Methods and Programs.
64. WD Circular No. 59, 2 Mar 42.
65. Robert P. Patterson, US/W to CG Materiel Command CG SOS, 9 Apr 42, in AAG 300.8, Procurement Regulations. See also AAG 400.12, Procurement Methods and Programs.

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Chapter IV

1. Cong. Rec., 76 Cong., 1 Sess., 25; H.R. 93, in the House, 3 Jan 39.
2. 1st ind (basic unknown), Brig. Gen. A.V. Robins to C/AC, 18 Jan 39, in Plans Div file 032, Legislation General, AFSHO.
3. Comment 7, R&R, Col. R.B. Lincoln to C/AC, 26 Jan 39; and Comment 9, Capt. E.H. Snodgrass to C/AC, 7 Feb 39, both in file cited above. The Patents Section, it should be noted, was the antecedent of the office of the Air Judge Advocate.
4. Cong. Rec., 76 Cong., 1 Sess., 2440; S. 1738, in the Senate, 8 Mar 39. The bill also provided for the establishment of a Bureau of Mines research station and a Military Aeronautical School in the same locale as the engineering center.
5. Copy of ltr, S/W to Morris Sheppard, 24 Mar 39, in Plans Div file 032, Legislation AC Proposed, 76 Cong., 1 Sess.
6. Senate, Hearings on S. 1738, 76 Cong., 1 Sess. Only one witness, Willis G. Waldo, a consulting engineer, was heard.
7. Cong. Rec., 76 Cong., 1 Sess., 3078; ibid., 77 Cong., 1 Sess., 1032; ltr, S/W to Morris Sheppard, 7 Mar 41, in Plans Div file 032, Legislation Proposed for AC. H.J. Res. 177 of 20 February 1939 also would have provided for an engineering center. (Cong. Rec., 76 Cong., 1 Sess., 1646.) It, too, was opposed by the War Department.
8. House, Hearings on an Adequate National Defense, 76 Cong., 1 Sess., 6, 19, 24-25, 28, 72; Senate, Hearings on H.R. 3791, 76 Cong., 1 Sess., 19, 39, 51, 78, 80-81. The sum of \$5,000,000 was given to the Air Corps for research and development during fiscal year 1940. General Arnold stated that this amount would be spent primarily toward the development of high-speed combat planes and their equipment, but he held that this was not enough. In discussing the \$1,000,000 reduction by the Bureau of the Budget, Representative Ross A. Collins (Miss.) noted that once an extra \$1,000,000 had been given and the B-17 had been developed. (House, Hearings on H.R. 4630, 76 Cong., 1 Sess., 284, 314, 317-18; H. Rept. No. 112, 76 Cong., 1 Sess.; S. Rept. No. 213, 76 Cong., 1 Sess.; Public No. 44, 26 Apr 39; 53 Stat. 592.)

9. Public No. 534, 23 May 38; 52 Stat. 420. The total cost of the tunnel was not to exceed \$540,000.
10. H. Rept. No. 23, 76 Cong., 1 Sess.; Public No. 8, 16 Mar 39; 53 Stat. 535.
11. House, Hearings on Second Deficiency Appropriation for 1939 [H.R. 4219], 76 Cong., 1 Sess., 29-30, 34, 46. Also requested was \$6,000,000 contractual authority.
12. Ibid., 78.
13. H. Rept. No. 260, 76 Cong., 1 Sess.; Cong. Rec., 76 Cong., 1 Sess., 3131.
14. Ltrs., Gen. Arnold to Joseph S. Ames, Chairman, W.C.I., 23 Mar 39, and Rear Adm. A.B. Cook to J.S. Ames, 23 Mar 39, both in Senate, Hearings on H.R. 5219, 76 Cong., 1 Sess., 30. In a memo to The Adjutant General on 14 April the Air Corps pointed out that rapid strides in aviation made aircraft obsolete more quickly and stressed that "the rate of depreciation must parallel the intensity and progress of research and development." (Memo for AG by C/AC, 14 Apr 39, in Plans Div file 121.2, Estimates FY 1941.)
15. S. Rept. No. 257, 76 Cong., 1 Sess.; Cong. Rec., 76 Cong., 1 Sess., 4296-99.
16. H. Rept. No. 510, 76 Cong., 1 Sess.; Cong. Rec., 76 Cong., 1 Sess., 6357; Public No. 61, 2 May 39; 53 Stat. 628. The Air Corps had requested \$1,125,000 of which \$600,000 was to be used for experimental and research work on rotary-wing and other aircraft as authorized by Public No. 787 of 30 June 1938. The "other" aircraft referred primarily to "slow flying" planes. Only \$300,000 of the requested \$600,000 was allowed, and this could be expended only on rotary-wing craft. (House, Hearings on H.R. 5219, 76 Cong., 1 Sess., 485-87; 53 Stat. 641.)
17. Quoted in Cong. Rec., 76 Cong., 1 Sess., App. 1455.
18. Ibid., App. 1517.
19. House, Hearings on H.R. 6791, 76 Cong., 1 Sess., 5.
20. Ibid., 25-27.
21. Ibid., 31-32.
22. H. Rept. No. 822, 76 Cong., 1 Sess.; S. Rept. No. 696, 76 Cong., 1 Sess.; Public No. 164, 1 Jul 39; 53 Stat. 992.
23. Cong. Rec., 76 Cong., 1 Sess., 5195.

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24. The Air Corps laboratory at Wright Field engaged in applied military research, while the minor facilities at educational institutions were for applied production research. It should be noted that the NACA was composed of 15 members--civilians and Army and Navy officials--and had since its establishment in 1915 engaged in research for the Army, Navy, and aircraft industry.
25. Draft 2d ind (basic unknown), OCAC to AG, 22 May 39, in AAF 032, Legislation. The bill remained in committee.
26. Cong. Rec., 76 Cong., 1 Sess., 5269, 5768; H.R. 6399, in the House, 18 May 39.
27. Memo for AC/S, G-4 by C/AC, 1 June 39, in Plans Div files.
28. Ltr, S/W to A.J. May, 28 Jul 39, in Plans Div file 032, Legislation Construction.
29. Cong. Rec., 76 Cong., 1 Sess., 6038.
30. Ltr, S/W to A.J. May, n.d., in Plans Div file 032, Legislation Air Corps. The Bureau of the Budget had advised that this project would not be in accord with the program of the President.
31. H.R. 7232, in the House, 14 Jul 39; Cong. Rec., 76 Cong., 1 Sess., 9207.
32. Ltr, S/W to A.J. May, as cited in n. 28.
33. Cong. Rec., 76 Cong., 1 Sess., 10830; H. Rept. No. 1439, 76 Cong., 1 Sess., 23. Also requested and granted was an additional \$109,020 for personnel services.
34. House, Hearings on H.R. 7462, 76 Cong., 1 Sess., 138-39.
35. Ibid., 144-45. Representative Jennings Randolph appeared before the committee and strongly supported the increase of research facilities. (See ibid., 721-23.)
36. H. Rept. No. 1439, 76 Cong., 1 Sess.; S. Rept. No. 1138, 76 Cong., 1 Sess.; Public No. 361, 9 Aug 39; 53 Stat. 1306.
37. House, Hearings on H.R. 7922, 76 Cong., 3 Sess., 331-35.
38. H. Rept. No. 1515, 76 Cong., 3 Sess.; Cong. Rec., 76 Cong., 3 Sess., 516, 1217, 4889; Public No. 459, 18 Apr 39; 54 Stat. 134. On 18 February 1940 Frazier Hunt stressed the importance of more money for air research. (This Week, 18 Feb 40, quoted in Cong. Rec., 76 Cong., 3 Sess., App. 833-35.)

39. This committee was composed of Charles A. Lindbergh (chairman), Maj. Gen. H.H. Arnold, Rear Adm. John H. Towers, and Robert H. Hinckley (Chair).
40. Cong. Rec., 76 Cong., 3 Sess., 8094, 8100, 8104-05, 8111-12.
41. Public No. 667, 20 Jun 40; 54 Stat. 599-600.
42. This was the name given to the California laboratory in honor of the former chairman of NACA, Dr. Joseph Ames.
43. House, Hearings on H.R. 2783, Part 1, 76 Cong., 3 Sess., 342, 347-48; H. Rept. No. 15, 77 Cong., 1 Sess., 16.
44. Senate, Hearings on H.R. 2788, 77 Cong., 1 Sess.; Public No. 28, 4 Apr 41; 55 Stat. 114-15.
45. House, Hearings on H.R. 5166, 77 Cong., 1 Sess., 93.
46. H. Rept. No. 849, 77 Cong., 1 Sess., 19, 25; Public No. 150, 3 Jul 41; 55 Stat. 546-47.
47. Dr. Vannevar Bush had been designated head of the Office of Scientific Research and Development which was to mobilize the scientific talents of the country on non-aeronautical matters. The OSRD confined itself to aeronautical research. The OSRD, however, did do some research on Air Corps problems. Among Air Corps projects being worked on by the National Defense Research Committee (a subsidiary of the OSRD) were oxygen generators, train-bomb calculators, "heat responsive, target seeking bomb/s," testing machines for fire-control devices and systems, and hydroombs. (See Research and Development Projects of the Engineering Division Material Comd., 1 Jan 44, pp. 73-87, in File 0.)
48. House, Hearings on H.R. 2783, Pt 2, 77 Cong., 1 Sess., 338-42; H. Rept. No. 1230, 77 Cong., 1 Sess.; Public No. 282, 23 Oct 41; 55 Stat. 748.
49. Public No. 630, 27 Jun 42; Public No. 523, 28 Apr 42; 56 Stat. 236, 392.
50. Public No. 11, 16 Mar 43; 57 Stat. 24-25.
51. House, Hearings on H.R. 1975, 78 Cong., 1 Sess., 202.
52. House, Hearings on H.R. 1762, 78 Cong., 1 Sess., 124-20; Public No. 90, 26 Jun 43; 57 Stat. 183.
53. House, Hearings on H.R. 3598, 78 Cong., 1 Sess., 1534-37.
54. Ibid., 1540-41; H. Rept. No. 822, 78 Cong., 1 Sess., 29-30, 58; Public No. 216, 23 Dec 43; 57 Stat. 611.

55. H.R. 4070, 75 Cong., 2 Sess., 3c. This was the amount recommended by the Bureau of the Budget and the House Committee on Appropriations. In the Senate an item of \$1,300 for the purchase of two automobiles was struck out, bringing the total down to \$23,218,530. (H. Rept. No. 1023, 75 Cong., 2 Sess., 24; S. Rept. No. 730, 75 Cong., 2 Sess., 9.)
56. Public Law No. 529, 75 Cong., 2 Sess., 7.
57. H.R. 2374, 75 Cong., 1 Sess.
58. H.R. 1984, 75 Cong., 1 Sess.
59. Ibid., 40. The Bureau of the Budget had recommended an appropriation of \$26,000,000; but the House Committee on Appropriations deducted \$607 from the item for penalty mail. (H. Rept. No. 54, 75 Cong., 1 Sess., 10.)
60. Ibid..
61. S. Rept. No. 88, 79 Cong., 1 Sess.; Conference Rept. No. 430, 79 Cong., 1 Sess.
62. Memo for C/AC by AG AG 311 (3-30-39) Misc D, 10 Aug 39, in AG 121.2, Estimates, FY 1941; memo for Col. H.K. Loughry by Lt. Col. G.S. Warren, 15 Aug 39, in AG 111.3 N, Estimates.
63. House, Hearings on H.R. 9209, 76 Cong., 3 Sess., 491-92, 494. The Air Corps had received \$4,342,069 in 1938, \$3,549,602 in 1939, and \$10,000,000 in 1940 for experimental and research activities. (Ibid., 512.)
64. H. Rept. No. 1912, 76 Cong., 3 Sess., Public No. 611, 13 Jun 40; 54 Stat. 564-66.
65. House, Hearings on H.R. 10055, 76 Cong., 3 Sess., 79. This amount was over and above that for the NACA engine laboratory. (Ibid., 43.)
66. Cong. Rec., 76 Cong., 3 Sess., 8100, 8104-05, 8111-12, 9127; Public No. 667, 20 Jun 40; 54 Stat. 599.
67. House, Hearings on H.R. 4124, 77 Cong., 1 Sess., 160, 173; Cong. Rec., 77 Cong., 1 sess., 3093; Public No. 29, 5 Apr 41; 55 Stat. 123.
68. Cong. Rec., 76 Cong., 3 Sess., 8357; ltr., H.H. Woodring to Morris Sheppard, 25 Jun 40, in Plans Div files. The Secretary's letter reflected the attitude of the Air Corps Materiel Division. (ltr., Materiel Div to Plans, 6 Jun 40, in Ltr. 0321, Legislation.)
69. House, Hearings on H.R. 4965, 77 Cong., 1 sess., 21, 159, 406.
70. Ibid., 476.

71. Public No. 139, 30 Jun 41; 55 Stat. 378-79.
72. House, Hearings on H.R. 6159, 77 Cong., 1 Sess., 122-24.
73. Public No. 353, 17 Dec 41; 55 Stat. 812.
74. House, Hearings on H.R. 7280, 77 Cong., 2 Sess., 35, 197, 199.
75. Cong. Rec., 77 Cong., 2 Sess., 5513; Public No. 649, 2 Jul 42; 56 Stat. 620.
76. House, Hearings on H.R. 2996, 78 Cong., 1 Sess., 121, 144.
77. Public No. 108, 1 Jul 43; 57 Stat. 356.
78. House, Hearings on the Military Establishment Appropriation Bill for 1945 [H.R. 4967], 78 Cong., 2 Sess., 321.
79. H.R. 3550, 79 Cong., 1 Sess., 28.
80. House, Hearings on the Military Establishment Appropriation Bill for 1946 [H.R. 3550], 79 Cong., 1 Sess., 190.
81. House, Hearings on H.R. 4967, 78 Cong., 2 Sess., 321.
82. House, Hearing on H.R. 3550, 79 Cong., 1 Sess., 214.
83. H.R. 5182, 78 Cong., 2 Sess.; S. 825, 79 Cong., 1 Sess.; S. 1285, 79 Cong., 1 Sess.
84. H.R. 2012, 79 Cong., 1 Sess., 1.
85. H.R. 3440, 79 Cong., 1 Sess., 2.
86. H.R. 5407, 78 Cong., 2 Sess.; H.R. 165, 79 Cong., 1 Sess.
87. Ltr, S/W to Chairman, House Committee on Interstate and Foreign Commerce, 15 Nov 44, in AAG 032, Legislation.

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NOTE S

Chapter V

1. See AG 452.1, Sale . . . Abroad. Much information can be obtained from two items in the Lyon Project Records: No. 10-F, Curodological Summary on Foreign Release . . . ; Green Book, Foreign Sale Procedure, Air Department Authorizations.
2. Memo for DC/S by C/AC, 31 Oct 36, in AG 452.1, Sale . . . abroad.
3. Agreements between State Dept and War and Navy Depts, 19 and 30 Nov 34 and 6 Dec 34, mentioned in ltr from Sec of State to Sec of Navy, 13 Sep 35, in AG 452.1, Sale . . . Abroad.
4. AG No. 510.1 (Case No. 67), 3 Sep 35, in same file. If a plane had no "strikingly novel feature," it could be released for export "at an early date" before the lapse of 12 months.
5. Memo for Lt. Col. J.L. Lynd by Brig. Gen. A.W. Robins, Chief, Materiel Div, 28 Oct 36, ibid.
6. Summary of export licences . . . , Materiel Planning Sec, Materiel Div, 19 Mar 40, in Lyon Project Records, No. 10A, Foreign Sales.
7. Cong. Rec., 76 Con., 1 Sess., 804; H.R. 3221, in the House, 25 Jan 39. The bill was introduced "by request."
8. Draft ltr, S./: to Harold Smith, 25 May 39, in AG 033, Legislation; Cong. Rec., 76 Con., 1 Sess., 3728, 3763, 4903, 5776, 6589; 53 Stat. 795. The Senate substituted H.R. 3221 for its own S. 1082 which had been introduced on 27 January 1939.
9. Cong. Rec., 76 Cong., 1 Sess., 1574; R.R., Plans Div to C/A.C., 15 Mar 39, and C/AC to AG, 20 Mar 39, in Plans Div files.
10. Senate, Hearings on H.R. 3791, 76 Cong., 1 Sess., 31.
11. Cong. Rec., 76 Cong., 1 Sess., 2143. There was not enough difference in the replies of various areas to draw any conclusion as to the more decided opposition of any one section of the country.
12. Proc. No. 2348, 5 Sep 39, 4 Fed. Reg. 3809; Proc. No. 2352, 8 Sep 39, 4 Fed. Reg. 3851; 54 Stat. 2629-30, 2643; 50 U.S.C. L., App. 4439-41, 4442.

13. Cong. Rec., 76 Cong., 2 Sess., 46, 794-800; 54 Stat. 4-12.
14. Proc. No. 2237, 1 May 1937; 54 Stat. 1834; International Traffic in Arms, Dept. of State Publication No. 1407, 7th ed.
15. Memo for AS/W by C/AC, 7 Aug 39, in AAG 453.1-3295G, Sale . . . Abroad.
16. House, Hearings on Emergency Supplemental Appropriation Bill for 1940, 76 Cong., 3 Sess., 88.
17. House, Hearings on H.R. 9209, 76 Cong., 3 Sess., 475-78, 483.
18. Senate, Hearings on H.R. 9209, 76 Cong., 3 Sess., 38.
19. Cong. Rec., 76 Cong., 3 Sess., 6593-95. On 18 March 1940 Representative Carl Vinson (Ga.) submitted to the House a letter from the Secretary of the Navy in which the benefits of foreign sale of aircraft were noted. The Secretary pointed out that this sale had not interfered with the Navy's procurement program; in at least one instance, earlier Navy deliveries had resulted, and there was evidence that the cost of aircraft had been reduced. (Ibid., 3003.)
20. Ibid., App. 355-56.
21. Ibid., 2765.
22. Ltr, S/W to A.J. May, 4 Apr 40, in AAG 452.1B, Sale . . . Abroad.
23. Quoted in Cong. Rec., 76 Cong., 3 Sess., App. 1699.
24. AG 452 (3-27-40) M-CCS-M, 29 Mar 40.
25. See Washington Times-Herald, 4 Apr 40; memo for A.J. May by C/AC, 4 Apr 40; and WD Press Release, 5 Apr 40, in AAG 452.1-3295 H, Sale . . . Abroad.
26. Washington Daily News, quoted in Cong. Rec., 76 Cong., 3 Sess., App. 1893-94.
27. Cong. Rec., 76 Cong., 3 Sess., 4643. The P-40's which were deferred in favor of the Allies had been ordered by the British in the summer of 1939. (Memo for Merrill C. Meigs, Chief, Aircraft Br, OPM by Gen. Arnold, 19 Mar 41, in AAG 452.1-3295 #1, Sale . . . Abroad.)
28. Cong. Rec., 76 Cong., 3 Sess., 8823-31; 54 Stat. 681.
29. Quoted in Cong. Rec., 76 Cong., 3 Sess., App. 2991-92.

30. Cong. Rec., 76 Cong., 3 Sess., 6244; H. Doc. No. 751, 76 Cong., 3 Sess.
31. Cong. Rec., 76 Cong., 3 Sess., 6471, 6473-74.
32. Ibid., 7609, 7771, 7807, App. 3781-82; House, Hearings on H.R. 4050, 77 Cong., 1 Sess., 18; Washington Daily News, 11 Jun 40.
33. Quoted in Cong. Rec., 76 Cong., 3 Sess., App. 4573.
34. Ibid., 1757.
35. Ibid.
36. Proportion of Accepted Deliveries of Airplane Engines by Customer . . . Jan.-July 1940, Materiel Planning Sec, Materiel Div, 26 Aug 40, in Lyon Project Records, No. 104, Foreign Sale; Summary of Exports . . . , 10 Oct 40, in AG 452.1-3295, Sale . . . Abroad.
37. Senate, Hearings on H.R. 10263, 76 Cong., 3 Sess., 39-50. Public No. 671 of 23 June 1940 doubtless had something to do with this stoppage.
38. Memo for C/o Lt. C/A/C, 17 Sep 40, in AG 452.1B, sale . . . Abroad.
39. Cong. Rec., 76 Cong., 3 Sess., 12589-90, 12701.
40. Comment 2, Lt. Col., Chief, Materiel Div to Act C/A/C, 15 Jan 41, in AG 452.1-3295, Sale . . . Abroad.
41. Memo for Us/I by Brig. Gen. Davenport Johnson, Act C/A/C, 22 Jan 1941, in Lyon Project Records, No. 56, Procurement Data.
42. See New Plants Ltr 417, in Lyon Project Records, No. 64, Appropriations.
43. Cong. Rec., 77 Cong., 1 Sess., 46.
44. Ibid., 121.
45. Ibid., 459-519, 522-68, 573-678, 710-49, 753-81, 785-815, 822, 947, 1032, 2097-98, 2173, 2193, 2297; Public No. 11, 11 Mar 41; 55 Stat. 31-33.
46. House, Hearings on H.R. 4050, 77 Cong., 1 Sess.; H. Rept. No. 276, 77 Cong., 1 Sess.; Cong. Rec., 77 Cong., 1 Sess., 3079; Public No. 23, 27 Mar 41; 55 Stat. 53; memo for A/C/S, G-4 by Lt. Col. E.L. Myers, n.d., in Lyon Project Records, No. 63, Lend-Lease Administration; memo for DG/S by C/A/C, 1 Jul 41, in AG 381.342, Materials for War, Lend-Lease. The largest single item was for air materiel; the total appropriation was \$7,000,000,000.
47. House, Hearings on H.R. 6159, 77 Cong., 1 Sess., 244-56; Public No. 353, 17 Dec 41; 55 Stat. 813.

48. House, Hearings on H.R. 6448, 77 Cong., 2 Sess., 3, 14; H. Rept. No. 1659, 77 Cong., 2 Sess., 4-5; Public No. 422, 30 Jan 1942. The fifth supplemental appropriation for 1942 carried over five billion dollars for lend-lease, but none of it was for aircraft items.
49. House and Senate, Hearings on H.R. 5788, Pt. 1, 77 Cong., 1 Sess.; H. Rept. No. 1230, 77 Cong., 1 Sess.; S. Rept. No. 721, 77 Cong., 1 Sess.; Public No. 282, 28 Oct 41; 55 Stat. 746.
50. Ltr, Gen. Arnold to Gen. Royce, 22 Oct 41, in AAG 452.1 C, Sale . . . Abroad. General Royce at that time was military attaché in London.
51. House, Hearings on H.R. 6868, Pt. 2, 77 Cong., 2 Sess., 11, 42-43; H. Rept. No. 1956, 77 Cong., 1 Sess.; S. Rept. No. 1257, 77 Cong., 2 Sess.; Public No. 528, 28 Apr 42.
52. House, Hearings on H.R. 7280, 77 Cong., 2 Sess., 21-22, 25, 28.
53. Public No. 649, 2 Jul 42; 56 Stat. 611. It should be pointed out that the supplemental defense aid appropriation for 1943 carried no funds for air materiel. (See House, Hearings on H.R. 2753, 78 Cong., 1 Sess.; H. Rept. No. 464, 78 Cong., 1 Sess.)
54. House, Hearings on H.R. 2996, 78 Cong., 1 Sess., 521-24; H. Rept. No. 566, 78 Cong., 1 Sess., 13.
55. Memo for Brig. Gen. L.W. Miller by Lt. Col. F.L. Kohlrieser, Materiel Comd, 15 Oct 43, in AAG 400.12, Procurement; 1st ind (basic unknown), Col. R.S. Macrum to BGWD, 31 Jan 44, in AAG 112.4, Defense Aid Funds.
56. For a full discussion of lend-lease, see Edward R. Stettinius, Jr., Lend-Lease, Weapon for Victory. See also the quarterly reports to Congress by the President on the progress of lend-lease.

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House of Representatives:

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Hearings  
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United States Code. 1940 edition, and Supplements 1 (1941),  
2 (1942), and 3 (1943).

United States Statutes at Large.

The above materials constitute the principal published sources for this study. Most significant among these are the House hearings on the military establishment appropriation bills. The hearings and reports frequently shed much light on the cause and effect of events and legislation that are not to be found in any other place. The debates and proceedings are relatively unimportant from the standpoint of understanding the measures but, of course, are significant for expressions of opinions, for newly raised issues, and for material on bills on which no committee hearings were held.

Central Files

Army Air Forces (cited as AAG):  
004                    Commercial Enterprises . . . Projects  
032                    Legislation

|                |                                  |
|----------------|----------------------------------|
| 111.3          | Estimates, Bulk                  |
| 111.3V         | Estimates                        |
| 111.B          | Estimates for Appropriations     |
| 112.4          | Defense Aid Funds                |
| 112.4A         | Allotments                       |
| 121.2          | Estimates, FY 1941               |
| 300.8          | Procurement Regulations          |
| 321.9          | General Arnold's Book, Bulk      |
| 381.3A2        | Materials for War, Lend Lease    |
| 400.12         | Procurement                      |
| 400.12H        | Procurement Methods and Programs |
| 400.13 Special | Educational Orders               |
| 452.1          | Sale . . . Abroad                |
| 452.1-13       | Purchase of Airplanes            |
| 452.1-17C      | Manufacture of Airplanes         |
| 452.1-3295     | Sale . . . Abroad                |

These files contain vital as well as much trivial material on the legislative history of materiel legislation, including background, effects, and administration.

War Department (Adjutant General):

AG 311 (3-30-39) Misc. D  
AG 381 National Defense (6-26-40)  
AG 452 (3-27-40) M-OCS-M, 29 March 1940

Incidental information for this monograph.

Office Files

Air Historical Office:

Files of the Plans Division, OCAC

These contain the background of, and Air Corps reaction to, much of the legislation up to 1941.

Army Air Forces Historical Studies:

No. 7, Legislation Relating to the Army Air Forces Training Program, 1939-1943.

No. 16, Legislation Relating to the AAF Personnel Program, 1939-May 1944.

These two studies treat other portions of some of the acts discussed in this monograph and are helpful in relating the training, personnel, and materiel programs to one another.

Weekly Activity Reports of Management Control, 4 Nov. 1943-6 May 1944.

The statistical portion of these reports indicates the progress and degree of completion of the various materiel programs authorized by Congress.

Daily Activity Reports of AFDMC, September 1943 through June 1945.

AC/AS, Materiel and Services:

Lyon Project Records

This set of records kept by the Technical Executive of the Materiel Division covers many phases of the materiel program up to 1941. The most helpful numbers for this study were:

|            |  |
|------------|--|
| 1          | 10,000 Airplane Program  |
| 10-A       | Foreign Sale   |
| 10-F       | Chronological Summary on Foreign Release . . . .               |
| 11         | Industrial Planning and Educational Orders                     |
| 22         | Capacity of the Aircraft Industry                              |
| 29         | 36,000 Program   |
| 34         | Productive Capacity and Delivery Schedules                     |
| 42-A       | Memoranda, Chief of Staff                                      |
| 42-B       | Miscellaneous Memoranda for the Assistant Secretary of War     |
| 48         | Government-Owned Factories                                     |
| 56 Procure | Procurement Data   |
| 58         | Summary of Procurement Requirements and all Air Corps Programs |
| 62         | The Army 12,000 Airplane Program                               |
| 63         | Lend-Lease Administration                                      |
| 64         | Appropriations   |
| Green Book | Foreign Sale Procedure, War Department Authorizations          |

Budget and Fiscal, AAF:

Charts kept in this office were helpful in determining the breakdown of the appropriations and in showing the action of various War Department agencies on Air Corps appropriation requests.

Newspapers

Army-Navy Journal, 14 Jan. 1939  
Atlanta Constitution, 17 May 1940  
Boston Herald, 16 May 1940

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Chicago Daily News, 13 May 1940  
Chicago Daily Tribune, 17 May 1940  
Cleveland Plain Dealer, 13 Jan. 1939  
Denver Post, 10 May 1940  
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Hartford (Conn.) Times, 19 Sept. 1940  
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New York Times, 13 April 1939, 13 March 1940  
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Portland Oregonian, 13 Jan. 1939, 16 May 1940  
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Washington Daily News, 28 May 1940, 11 June 1940  
Washington American Star, 16 April 1939  
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Washington Times-Herald, 4 April 1940

Important in ascertaining public reaction to governmental activities.

Magazines

American Aviation Daily, X, No. 4, 5 July 1940  
Army Ordnance, XI, Nos. 117 and 118 (Nov.-Dec. 1936 and Jan.-Feb. 1940)  
This Week, 18 Feb. 1940

Of minor importance to this study.

Publications

Final Report of War Department Special Committee on Army Air Corps  
/Baker Board/, July 13, 1934, Washington, 1934.

Relevant to this study only for its recommendation of the 2,320-plane program.

International Traffic in Arms (Dept. of State Publication No. 1407).  
7th edition, 1933.

Sets forth the policies governing sale of munitions abroad.

Stettinius, Edward R., Jr., Lend-Lease, Weapon for Victory. New York, 1944.

A good analysis of the background and workings of the lend-lease system.

## Appendix I

## APPROPRIATIONS FOR ARMY AIR CORPS FOR FISCAL YEARS 1926-1939\*

| <u>Fiscal year</u> | <u>Requested by Air Corps</u> | <u>Approved by Secretary of War</u> | <u>Approved by Bureau of the Budget</u> | <u>Appropriated by Congress</u> |
|--------------------|-------------------------------|-------------------------------------|---|---------------------------------|
| 1926               | \$25,000,000                  | \$16,113,043                        | \$16,850,000                            | \$16,850,000                    |
| 1927               | 23,644,000a                   | 18,380,000a                         | 16,900,000a                             | 16,900,000a                     |
| 1928               | 25,588,066b                   | 26,789,050b                         | 21,396,300b                             | 22,191,300b                     |
| 1929               | 36,536,028                    | 31,604,383                          | 25,822,268                              | 26,435,157                      |
| 1930               | 71,990,965c                   | 33,250,000c, d                      | 31,197,429e                             | 32,440,785e                     |
| 1931               | 54,007,902                    | 42,692,260                          | 35,823,473                              | 38,043,877                      |
| 1932               | 54,433,599                    | 38,390,529                          | 31,522,295                              | 31,479,635                      |
| 1933               | 34,406,032                    | 30,822,717                          | 25,482,903                              | 25,439,131                      |
| 1934               | 32,068,932f                   | 29,509,810f                         | 26,818,560f                             | 26,324,185f                     |
| 1935               | 36,309,420f                   | 34,037,409f                         | 24,450,253f                             | 30,708,797f                     |
| 1936               | 77,333,242g                   | 52,702,900g                         | 45,383,400g                             | 50,070,153g                     |
| 1937               | 76,207,988h                   | 100,649,892h                        | 62,313,247h                             | 62,380,747h                     |
| 1938               | 89,144,936i                   | 60,442,202i                         | 60,292,214i                             | 67,075,514i                     |
| 1939               | 99,142,144j                   | 73,556,972j                         | 73,556,972j                             | 73,556,972j                     |
| Total              | \$735,813,254                 | \$588,741,167                       | \$497,809,314                           | \$519,896,253                   |

- a. Plus \$2,150,000 to care for 1926 contract authorization.
  - b. The Air Corps requested \$17,772,363 supplemental; the Secretary of War approved \$2,111,992, but no further action was taken.
  - c. Plus \$5,500,000 to care for 1929 contract authorization.
  - d. Secretary of War approved a supplemental request of \$5,992,536, but no further action was taken.
  - e. Plus \$2,250,000 for 1929 contract authorization.
  - f. Includes \$3,000,000 contract authorization for aircraft, spare engines, and spare parts.
  - g. Includes \$7,686,753 contract authorization.
  - h. Includes \$10,669,786 contract authorization.
  - i. Includes \$19,126,894 contract authorization.
  - j. Includes \$19,126,894 contract authorization.
- \* Figures from chart in Budget and Fiscal Office, AAF. These figures do not include funds to pay previous contract authorization.

Appendix 2

APPROPRIATIONS FOR THE NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS, FISCAL YEARS 1939 - 1946

| <u>Public No.</u> | <u>Date</u>  | <u>Total Cash</u> | <u>Contract Authorizations</u> |
|-------------------|--------------|-------------------|--------------------------------|
| 534               | 23 May 1938  | \$1,700,000       |                                |
| 8                 | 16 Mar. 1939 | 2,180,000         |                                |
| 61                | 2 May 1939   | 2,363,980         |                                |
| 361               | 9 Aug. 1939  | 2,000,000         |                                |
| 459               | 18 Apr. 1940 | 8,000,000         | \$8,109,020                    |
| 667               | 26 June 1940 | 3,200,000         | 6,400,000                      |
| 28                | 5 Apr. 1941  | 13,601,910        |                                |
| 150               | 3 July 1941  | 1,340,000         | 4,900,000                      |
| 282               | 23 Oct. 1941 | 1,424,000         | 6,207,500                      |
| 528               | 28 Apr. 1942 | 3,500,000         |                                |
| 630               | 27 June 1942 | 19,082,736        |                                |
| 11                | 18 Mar. 1943 | 5,494,000         |                                |
| 90                | 26 June 1943 | 19,453,500        |                                |
| 216               | 23 Dec. 1943 | 17,287,715        |                                |
| 358               | 27 June 1944 | 23,233,830        |                                |
| 529               | 22 Dec. 1944 | 7,401,000         |                                |
| 40                | 25 Apr. 1945 | 10,307,500        |                                |
| 49                | 3 May 1945   | 26,014,393        |                                |
|                   | TOTAL        | \$167,584,564     | \$25,616,520                   |

Appendix 3

EXCERPTS FROM U.S. STATUTES CONCERNING  
AIR MATERIEL LEGISLATION, 1939-1944

Section 1 of Public Law Number 18, 3 April 1939 (53 Stat. 555-56).

Be it enacted. . . That the Act approved June 24, 1936 (49 Stat. 1907), is hereby repealed. Section 8 of the Act of July 2, 1926 (44 Stat. 780), is hereby stricken out and the following is substituted in lieu thereof:

"SEC. 8. The Secretary of War is hereby authorized to equip and maintain the Air Corps with not to exceed six thousand serviceable airplanes, and such number of airships and free and captive balloons as he may determine to be necessary for training purposes together with spare parts, equipment, supplies, hangars, and installations necessary for the operation and maintenance thereof; and there is hereby authorized to be appropriated for such purposes an amount not exceeding \$300,000,000 together with such annual appropriations as may be necessary to maintain such air force. In order to maintain the number specified above, the Secretary of War is hereby authorized to replace obsolete or unserviceable aircraft from time to time: Provided, That the total number of airplanes and airships herein authorized shall be exclusive of those awaiting salvage or undergoing experiment or service tests, those authorized by the Secretary of War to be placed in museums, and those classified by the Secretary of War as obsolete: And provided further, That the total number of airplanes authorized in this section shall include the number necessary for the training and equipment of the National Guard and the training of the Organized Reserves as may be determined by the Secretary of War."

Section 1 of Public Law Number 611, 13 June 1940. An Act Making Appropriations for the Military Establishment for the fiscal year ending June 30, 1941, and for other purposes. (54 Stat. 366).

Provided further, That this appropriation may be expended without reference to the limitation contained in section 1 of the Act approved April 3, 1939 (Public, Numbered 18, Seventy-sixth Congress), as to the number of airplanes to be procured and maintained. . . .

Section of Public Law Number 703, 2 July 1940. An Act to expedite the strengthening of the national defense. (54 Stat. 713).

SEC. 3. All existing limitations with respect to the number of serviceable airplanes, airships, and free and captive balloons that may be equipped and maintained shall be suspended during the fiscal year 1941.

Section of Public Law Number 139, An Act Making appropriations for the Military Establishment for the fiscal year ending June 30, 1942, and for other purposes. (55 Stat. 379).

Provided further, That this appropriation may be expended without reference to the limitation contained in section 1 of the Act approved April 3, 1939 (Public, Numbered 18, Seventy-sixth Congress), as to the number of airplanes to be procured and maintained. . . .

Sections of Public Law No. 580, 5 June 1942, Providing for sundry matters affecting the Military Establishment. (56 Stat. 317).

SEC. 13. That the provisions of section 1 (a) and 1 (b) of the Act entitled "An Act to expedite the strengthening of the national defense", approved July 2, 1940 (Public, Numbered 703, Seventy-sixth Congress), are hereby continued in effect and made applicable to moneys appropriated for the War Department for national defense purposes during the period prescribed in section 16 of this Act. . . .

SEC. 14. All existing limitations with respect to the number of serviceable airplanes, airships, and free and captive balloons that may be equipped and maintained are suspended. . . .

SEC. 16. The provisions of this Act shall remain in force during the continuance of the present war and for six months after the termination of the war, or until such earlier time as the Congress by concurrent resolution or the President by proclamation may designate.

Public Law Number 639, 16 June 1938, An Act to provide for placing educational orders to familiarize private manufacturing establishments with the production of munitions of war of special or technical design, noncommercial in character. (52 Stat. 707-708).

Be it enacted. . . That the Secretary of War is hereby authorized to place educational orders for munitions of war of special or technical design, or both, noncommercial in character (hereinafter called "special munitions"), and essential accessories and parts thereof needed in the military service, with commercial concerns to familiarize commercial and manufacturing establishments with the manufacture of such munitions and such accessories and parts. In arranging for placing such educational orders, bids shall be solicited only from such establishments as, in the Secretary's judgment, will be competent in time of war to manufacture the particular class of special munitions with respect to which the bid is solicited. In the determination of which classes of special munitions are to be manufactured under this Act, and in the determination of which of the solicited bidders is to be awarded any contract, the Secretary shall have regard solely to the selection of such classes of special munitions and of such bidders as will, in his judgment, under all the circumstances, best serve the interest of the United States and best promote the cause of national defense. The Secretary of War shall enter into no contract under this section without the approval of the President.

SEC. 2. That the first of any such educational orders placed with any person, firm, or corporation for supplying any such munitions, accessories, or parts, may include a complete set of such gages, dies, jigs, tools, fixtures, and other special aids and appliances, including drawings thereof, as may be required for the production of such munitions, accessories and parts in quantity in the event of an emergency. The title to all such facilities shall remain in the Government of the United States.

SEC. 3. That not more than one such educational order for the manufacture of the same, or substantially the same, article of special munitions shall be given to the same person, firm, or corporation within any period of three successive years. This section shall not prohibit the awarding of any contract during any war in which the United States is engaged.

SEC. 4. That, to carry out the provisions of this Act, there is authorized to be appropriated the sum of \$2,000,000 during each of the five fiscal years beginning with the fiscal year during which this Act is enacted.

Section 13 of Public Law Number 18, 3 April 1939. (53 Stat. 560).

SEC. 13. That section 4 of the Act approved June 16, 1938, entitled "An Act to provide for placing educational orders to familiarize private manufacturing establishments with the production of munitions of war of special or technical design, noncommercial in character", be amended to read as follows:

"SEC. 4. That funds appropriated to accomplish the purposes of this Act shall be available for expenditures incidental to the accomplishment of the procurements made thereunder, including production studies, factory planes, and other production data and the storage and maintenance of gages, dies, jigs, tools, fixtures, and other special aids and appliances procured thereunder. To carry out the provisions of this Act there is authorized to be appropriated the sum of \$34,500,000, which amount shall be available during the fiscal years 1939, 1940, and 1941, and there is further authorized to be appropriated the sum of \$2,000,000 during each of the four fiscal years succeeding the fiscal year 1941."

Public Law Number 168, 13 July 1939, An Act to authorize the procurement, without advertising, of certain aircraft parts and instruments or aeronautical accessories, and for other purposes. (53 Stat. 1000).

Be it enacted. . . That whenever proposals are invited for the furnishing of aircraft parts or instruments or aeronautical accessories for the War Department, the character of which or the ingredients thereof are of such a nature that the interests of the public service would be injured by publicly divulging them, the Chief of the Air Corps is authorized to purchase, without advertising, such

aircraft parts or instruments or aeronautical accessories in such manner as he may deem most economical and efficient: Provided, That this Act will not be construed as in any way amending the Act of July 2, 1926 (44 Stat. 780), or as authorizing the open market purchase of airplanes for purposes other than as provided in that Act: and provided further, That no purchase shall be made under this Act until the Secretary of War shall have certified that a secret order is necessary, and only then after submitting the proposal to three reputable concerns for their respective bids. All laws and parts of laws which are inconsistent herewith or in conflict with the provisions hereof are hereby repealed.

Public Law Number 426, 5 March 1940, An Act to facilitate the procurement of aircraft for the national defense. (54 Stat. 45-46).

Be it enacted. . . That, until June 30, 1941, whenever contracts are to be awarded as a result of competitive bids for furnishing the War Department or the Navy Department with aircraft, aircraft parts, and accessories therefor, the Secretary of War or the Secretary of Navy is authorized to award a contract for the aircraft, aircraft parts, and accessories to be purchased as a result of any such competition to the bidder that the said Secretary shall find to be the lowest responsible bidder that can satisfactorily perform the work or service required to the best advantage of the Government, or, in his discretion and when such action is considered necessary by the said Secretary in the interest of the national defense, to award contract for such aircraft, aircraft parts, and accessories to such bidders, not exceeding three in number, as said Secretary shall find to be the lowest responsible bidders that can satisfactorily perform the work or the service required to the best advantage of the Government. The determinations as to such multiple awards and the necessity for making the same shall be based upon quality, times and rate of delivery, price and the prevention of the overloading of a plant or plants and such division of awards shall be made only when found by the said Secretary to be in the interest of the national defense: Provided, That no awards shall be made at prices in excess of those offered by the bidders in any such competition and that the decision of the Secretary of the Department concerned as to the award of any such contract, or contracts, the interpretation of the provisions thereof, and the application and administration of the same shall not be reviewable, otherwise than as may be therein provided for by any officer or tribunal of the United States except the President and the Federal courts: Provided further, That a report shall be made to the Congress by the Secretary of the Department concerned in the case of any competition as a result of which quantity contracts are entered into under authority of this Act with more than one bidder, immediately upon the execution of such contracts, setting forth the articles purchased, the prices paid therefor, the name or names of each bidder,

and of each contractor receiving a contract, and the particular reasons for awarding each of such contracts: Provided further, That any contract entered into under the authority hereby granted, for the construction of any complete aircraft or any portion thereof, shall be subject to the applicable profit-limitation provisions of the Act of March 27, 1934 (48 Stat. 505), as amended by the Act of June 25, 1936 (49 Stat. 1926), and as further amended by the Act of April 3, 1939 (Public, Numbered 18, Seventy-sixth Congress): Provided further, That procurement of aircraft, aircraft parts, and accessories therefor shall be made under authority of this Act only when in the opinion of the Secretary of the Department concerned such action is necessary in the public interest: Provided further, That the authority herein granted shall not be construed to abrogate, repeal, or suspend any of the provisions of Revised Statutes (3709, U.S.C. 41:5), the Act of March 2, 1901 (31 Stat. 905), the Act of July 2, 1926 (44 Stat. 787), section 14 of the Act of April 3, 1939 (Public, Numbered 18, Seventy-sixth Congress), or the Act of July 13, 1939 (Public, Numbered 168, Seventy-sixth Congress), or to prohibit the award of any contracts in any manner now authorized by law, but shall be construed as additional legislation to be utilized under the conditions herein set forth, during the effective period of this Act: And provided further, That this Act shall be applicable under the conditions herein set forth to awards of contracts upon which competitive bids have been heretofore requested or received but as a result of which contracts have not been awarded.

Section of Public Law Number 354, 18 December 1941, An Act to expedite the prosecution of the war effort. (55 Stat. 839).

SEC. 201. The President may authorize any department or agency of the Government exercising functions in connection with the prosecution of the war effort, in accordance with regulations prescribed by the President for the protection of the interests of the Government, to enter into contracts and into amendments or modifications of contracts heretofore or hereafter made and to make advance, progress and other payments thereon, without regard to the provisions of law relating to the making, performance, amendment, or modification of contracts whenever he deems such action would facilitate the prosecution of the war: Provided, That nothing herein shall be construed to authorize the use of the cost-plus-a-percentage-of-cost system of contracting: Provided further, That nothing herein shall be construed to authorize any contracts in violation of existing law relating to limitation of profits: Provided further, That all acts under the authority of this section shall be made a matter of public record under regulations prescribed by the President and when deemed by him not to be incompatible with the public interest.

Section of Public Law No. 528, 28 April 1942, An Act making additional appropriations for the national defense for the fiscal year ending June 30, 1942, and for other purposes. (56 Stat. 245-46).

SEC. 403.

(b) The Secretary of each Department is authorized and directed to insert in any contract for an amount in excess of \$100,000 hereafter made by such Department (1) a provision for the renegotiation of the contract price at a period or periods when, in the judgment of the Secretary, the profits can be determined with reasonable certainty; (2) a provision for the retention by the United States or the repayment to the United States of (A) any amount of the contract price which is found as a result of such renegotiation to represent excessive profits and (B) an amount of the contract price equal to the amount of the reduction in the contract price of any subcontract under such contract pursuant to the renegotiation of such subcontract as provided in clause (3) of this subsection; and (3) a provision requiring the contractor to insert in each subcontract for an amount in excess of \$100,000 made by him under such contract (A) a provision for the renegotiation by such Secretary and the subcontractor of the contract price of the subcontract at a period or periods when, in the judgment of the Secretary, the profits can be determined with reasonable certainty, (B) a provision for the retention by the United States or the repayment to the United States of any amount of the contract price of the subcontract which is found as a result of such renegotiation, to represent excessive profits, and (C) a provision for relieving the contractor from any liability to the subcontractor on account of any amount so retained by or repaid to the United States.

(c) The Secretary of each Department is authorized and directed, whenever in his opinion excessive profits have been realized, or are likely to be realized, from any contract with such Department or from any subcontract thereunder, (1) to require the contractor or subcontractor to renegotiate the contract price, (2) to withhold from the contractor or subcontractor any amount of the contract price which is found as a result of such renegotiation to represent excessive profits, and (3) in case any amount of the contract price found as a result of such renegotiation to represent excessive profits shall have been paid to the contractor or subcontractor, to recover such amount from such contractor or subcontractor. Such contractor or subcontractor shall be deemed to be indebted to the United States for any amount which such Secretary is authorized to recover from such contractor or subcontractor under this subsection, and such Secretary may bring actions in the appropriate courts of the United States to recover such amount on behalf of the United States. All amounts recovered under this subsection shall be covered into the Treasury as miscellaneous receipts. This subsection shall be applicable to all contracts and subcontracts hereafter made and to all contracts or subcontracts heretofore made, whether or not such contracts or subcontracts contain a renegotiation or recapture clause, provided that final payment pursuant to such contract or subcontract has not been made prior to the date of enactment of this Act.

Sections of Public Law No. 580, 5 June 1942, An Act providing for sundry matters affecting the Military Establishment. (56 Stat. 316-17).

SEC. 9. That the provisions of the Act to facilitate the procurement of aircraft for the national defense, approved March 5, 1940 (Public, Numbered 426, Seventy-sixth Congress), as amended by section

401 of the Second Revenue Act of 1940, approved October 8, 1940 (Public Numbered 801, Seventy-sixth Congress), shall be effective during the period prescribed in section 16 of this Act.

SEC. 16. The provisions of this Act shall remain in force during the continuance of the present war and for six months after the termination of the war, or until such earlier time as the Congress by concurrent resolution or the President by proclamation may designate.

Section 14 of Public Law Number 18, 3 April 1939. (53 Stat. 560).

SEC. 14. All the provisions of section 3 of the Act of March 27, 1934, as amended (48 Stat. 505; 49 Stat. 1926), and as amended by this section shall be applicable with respect to contracts for aircraft or any portion thereof for the Army to the same extent and in the same manner that such provisions are applicable with respect to contracts for aircraft, or any portion thereof for the Navy: Provided, That the Secretary of War shall exercise all functions under such section with respect to aircraft for the Army which are exercised by the Secretary of the Navy with respect to aircraft for the Navy: Provided further, That section 3b of the Act of March 27, 1934 (48 Stat. 505), as amended (49 Stat. 1926; 34 U.S.C. Supp. IV 496), is hereby further amended by inserting in the first sentence after the words "in excess of 10 per centum of the total contract prices" the words "for the construction and or manufacture of any complete naval vessel or portion thereof, and in excess of 12 per centum of the total contract prices for the construction and or manufacture of any complete aircraft or portion thereof"; by inserting in the first proviso after the words "That if there is a net loss on all such contracts or subcontracts" the words "for the construction and or manufacture of any complete naval vessel or portion thereof"; and by inserting at the end of the first proviso after the words "income taxable year" a comma and the words "and if there is a net loss, or a net profit less than 12 per centum, as aforesaid on all such contracts or subcontracts for the construction and or manufacture of any complete aircraft or portion thereof completed by the particular contractor within any income taxable year, such net loss or deficiency in profit shall be allowed as a credit in determining the excess profit, if any, during the next succeeding four income taxable years, and that the method of ascertaining the amount of excess profit initially fixed upon shall be determined on or before June 30, 1939": Provided further, That when aircraft are procured by the Secretary of War as a result of competitive bids requiring the submission of sample aircraft with bid, the Secretary is authorized, in his discretion, to purchase sample aircraft of competitors to whom an award is not made, not more than one each from not more than three such competitors, in order of merit, at prices not exceeding 75, 60, and 50 per centum, respectively, of the cost applicable in the opinion of the Secretary to the development and manufacture of such sample aircraft.

Section of Public Law Number 671, 28 June 1940, An Act to expedite the national defense, and for other purposes. (54 Stat. 677).

SEC. 2.

(b) After the date of approval of this Act no contract shall be made for the construction or manufacture of any complete naval vessel or any Army or Navy aircraft, or any portion thereof, under the provisions of this section or otherwise, unless the contractor agrees, for the purposes of section 3 of the Act of March 27, 1934 (48 Stat. 505; 34 U.S.C. 496), as amended-

(1) to pay into the Treasury profit in excess of 8 per centum (in lieu of the 10 per centum and 12 per centum specified in such section 3) of the total contract prices of such contracts within the scope of this subsection as are completed by the particular contracting party within the income taxable year; . . .

Section of Public Law Number 801, 8 October 1940, An Act to provide revenue, and for other purposes. (54 Stat. 1003).

SEC. 401. Suspension of Profit-Limiting Provisions of the Vinson Act . . .

The provisions of section 3 of the Act of March 27, 1934 (48 Stat. 505; 34 U.S.C., sec. 496), as amended, beginning with the first proviso thereof, and section 2 (b) of the Act of June 28, 1940 (Public, Numbered 671, Seventy-sixth Congress, third session), shall not apply to contracts or subcontracts for the construction or manufacture of any complete naval vessel or any Army or Navy aircraft, or any portion thereof, which are entered into in any taxable year to which the excess profits tax provided in subchapter E of Chapter 2 of the Internal Revenue Code is applicable or would be applicable if the contractor or subcontractor, as the case may be, were a corporation, and any agreement to pay into the Treasury profit in excess of 10 per centum, 12 per centum, or 8 per centum, as the case may be, of the contract prices of any such contracts or subcontracts shall be without effect. This section shall also apply to such contracts or subcontracts which were entered into before the date of the beginning of the contractor's or subcontractor's first taxable year which begins in 1940 and which are not completed before such date.

Section of Public Law Number 671, 28 June 1940, An Act to expedite national defense, and for other purposes. (54 Stat. 681).

SEC. 14 (a) Notwithstanding the provision of any other law, no military or naval weapon, ship, boat, aircraft, munitions, supplies, or equipment, to which the United States has title, in whole or in part, or which have been contracted for, shall hereafter be transferred, exchanged, sold, or otherwise disposed of in any manner whatsoever unless the Chief of Naval Operations in the case of naval material, and the Chief of Staff of the Army in the case of military material, shall first certify that such material is not essential to the defense of the United States.

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